



USAID KENYA DAIRY SECTOR COMPETITIVENESS PROGRAM

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List of Acronyms

APSK	Animal Production Society of Kenya
BDS	Business Development Services
CAIS	Center for Artificial Insemination Services
DTA	Dairy Traders Associations
DTF	Dairy Task Force
DVO	District Veterinary Officer
ESADA	Eastern and Southern Africa Dairy Association
FHI	Family Health International
GMP	Good Management Practices
HACCP	Hazard Analysis and Critical Control Points
HPI	Heifer Project International
ICT	Information Communication and Technology
IPM	Integrated Pest Management
NKCC	New Kenya Cooperative Creameries
KDB	Kenya Dairy Board
KDSC	Kenya Dairy Sector Competitiveness Program
KENDAPO	Kenya National Dairy Producers Organization
KENFAP	Kenya National Federation of Agricultural Producers
KLBO	Kenya Livestock Breeders Organization
KSB	Kenya Stud Book
LOL	Land O'Lakes, Inc.
MBC	Milk Bulking Center
MOLD	Ministry of Livestock Development
MOLD (DVS)	Ministry of Livestock, Department of Veterinary Services
MWG	Milk shed Working Group
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
PCPB	Pesticide Control Products Board
PERSUAP	Pesticide Evaluation Report Safer Use Action Plan
PMO	Pasteurized Milk Ordinance
PMP	Performance Management Plan
PMC	Resource Mobilization Centre
SBO	Smallholder Business Organizations
SoW	Scope of Work
SITE	Strengthening Informal Sector Training and Enterprise
SNV	Netherlands Development Organization
SPs	Service Providers
USAID	United States Agency for International Development
WRUA	Water Resource Users Association
WWS	World Wide Sires Consortium

I.0 Executive Summary and Program Highlights

This report summarizes the key activities implemented and the associated accomplishments for the USAID Kenya Dairy Sector Competitiveness (KDSC) program. The report covers the fourth year (October 2010-September 2011)¹ of the project. The KDSC program activities contribute to the achievement of intermediate results under USAID/Kenya Mission's SO7 on "Increasing Rural Households Income." To implement the program, Land O'Lakes employs a market-driven value chain approach, utilizing a Business Development Services (BDS) methodology.

During Year 4, KDSC realized significant achievements as it continued to address sector challenges, constraints, and stakeholder concerns in the targeted milk sheds. The program reached a total of 42,977 households during the year and benefiting 248,275 households cumulatively since the inception of the project. This shows that the project has reached 99 percent of the beneficiaries in this period. Incomes in the dairy sector have also increased. The income realized from dairy was Kshs. 5,199.65 per month during the period under review. Cumulatively this results in an increase of about 154 percent compared to baseline and surpassing the target increase of 60 percent by the end of Year 4. In addition during the fourth quarter, KDSC helped industry stakeholder organizations respond to surplus milk supply and price pressure challenges resulting from the significant increase in milk production in the recent quarters. Selected highlights for program activities and results during the year are included below.

Capacity Building for Farmers and Smallholder Business Organizations

The program recruited and trained 263 new business service providers during the year. This now takes the total number of service providers working with the program to 882 and surpassing the target of 350 service providers providing additional services to farmers by end of Year 4.

During the year a total of 1,441 operators were trained by the Naivasha Dairy Training Institute (DTI) through the facilitation of the program. Forty-four SBOs have achieved national certification and currently enforce quality regulations on suppliers. At the same time, eight milk bulking centres for Brookside and five bulking centres of NKCC have attained the national certification standards. This therefore shows that the program has been able to achieve a total of 57 dairy enterprises that have met the national certification standards against the target of 40 by the end of Year 4, and bettering the target by 40 percent.

During this period, the program facilitated capacity building of 39,232 dairy farmers giving a total of 90,434 members trained since the beginning of the project. This shows that the project has achieved 72% of the target by end of Year 4. Program interventions focused on training dairy farmers to equip them with the necessary technical skills to increase herd productivity and incomes.

During the third and fourth quarters of this reporting period, the program encouraged the development and analysis of action plans for all the SBOs working with the project to be implemented in the fiscal

¹KDSC CLIN year ends in April 30, however for KDSC program implementation reporting years follow the USAID FY structure

year of implementation. In this regard, the program contracted KIE consultants that facilitated the development of bankable business plans in selected progressive SBOs in each of the Milk sheds. Financial institutions have evaluated some of the business plans with an intention of funding some.

Technology Transfer

KDSC continued to promote uptake of dairy technology in all the milk sheds. During the period under review, smallholder farmers, Kabete, Lessos, and Nyeri milk sheds purchased 1,943 chaff cutters. The purchase and use of chaff cutters has contributed greatly in improving feed utilization efficiency/reduction in feed wastage. Sixty-four cooperatives purchased computers for their daily use with 29 of them having internet connections that have resulted in more efficient data management. The Program facilitated the purchase of 141 digital weighing scales. The finalized industry-wide web-based application has started serving as a complete dairy and livestock management information system for the livestock industry. During the period under review, a total of 11,941 farmers have registered in the e-dairy market place out of which 3,675 (30.8%) are women. At the same time, a total of 28 dairy processing companies have registered and listed their products in the e-market place and SBOs, veterinary centres, veterinary officers, AI service providers, banks and insurance companies are also users of the e-portal.

In other areas, the program emphasized appropriate technology for energy production and natural resource management, introducing biogas, fodder tree and shrub planting, and soil and water management techniques. All biogas technology is being constructed using a cost sharing basis between the client and the biogas project being implemented by KENFAP. A total of 616 biogas digesters were installed in this period and the farmers whose biogas plants are complete reported that they were satisfied with the work and the output of the same.

Milk Production

The program embarked on the improvement of the value of dairy cows for its members through an animal registration program with the Kenya Livestock Breeders Organization (KLBO) and Kenya Stud book. Service providers and collaborators registered a total of 12,193 dairy cows with the KBLO during the period under review. During this period, KDSC strengthened the Dairy Traders Association (DTA) so as to enhance quality milk consumption by the public. DTA has expanded its membership tremendously in order to reach more members.

KDSC has contributed to the increase in cow productivity by 36.9% resulting into yields of 8.9 liters/cow/day during the year. This shows that the program has been able to achieve only 63.6% of the target by the end of Year 4. In order to increase the competitiveness of the dairy sector, the program has concentrated in activities that would result in reduction in cost of production: Program promoted cost-cutting feeding regimes, including adoption of crop residue preservation, hay, silage, leguminous fodder technologies (Lucerne, desmodium, caliantra), and own feed formulation (use of molasses and microbes). These resulted in the reduction in cost of production by 20.4% against the 20% targeted of the program in Year 4. The increase in cost of production in Year 4 compared to year three has been occasioned by increase in price of animal feeds that was significant in this period.

Farmer and Smallholder Business Income

Results show that during the year, the gross margin reported by dairy farmers was KShs 10.05 which shows an increase of over 100% as compared to the baseline values surpassing the target of 32% by the end of Year 4. During the period under review, the program realized an improved income earned by the primary producers in the project area. This was realized due to improved prices due to federation of different SBOs, increased levels of productivity and availability of inputs by the service providers. The income realized from dairy was Kshs. 5,199.65 per month during the period under review. This cumulatively resulted in an increase of about 154% compared to baseline which has surpassed the target value of 60% by the end of Year 4 of the project implementation. The increase can be attributed to the increase in productivity and increase in average price as a result of project interventions. Increased use of productivity-enhancing technologies, especially artificial insemination, has been realized among farmers working with the program. Program data shows a marked increase in the proportion of farmers using AI as reported by 87% as compared to the baseline proportion (39.9%). The adoption of technology was low in the Kericho and Lessos as compared to other Milk sheds.

The program also facilitated the establishment of ten (10) new SBOs during the period under review resulting into a total of 124 SBOs showing an achievement of over 100%.

Access to Financial Services

The program has embarked on linking farmers with financial institutions so as to enable them develop their dairy enterprises. In this year, the KDSC team has introduced a total of 14,186 dairy farmers to credit facilities. This gives us a total of 42,814 farmers already linked to credit facilities against a target of 36,000 by the end of Year 4 with 37% of them being women. A total of US\$448,652 (KShs 39.03 million) was accessed by dairy farmers in the program area from financial service providers enabled through program links.

Gender Access and Youth Participation

Program efforts to promote gender and youth advancement have registered positive results. Members of Rugika Youth are dealing in fodder growing mostly napier. The group leaders expressed interest on fodder conservation and selling of hay to farmers and the group participated in a farmer field day where silage making was demonstrated. The main challenge for increasing youth involvement is their availability as they are sparsely distributed in their activitie. In two milk sheds the program successfully launched the youth football teamsa a way to bring youth together. During the team meetings, dairy matters are discussed to induce the members into dairying as a business.

The program continues to emphasize gender access and involvement, especially when it comes to decision-making. In Kitiri for example during the special delegates meeting attended by 71 members the female representative were 14%. This has been reported as a milestone since meetings in this farmer cooperative has been a preserve for male members only. The program helped mobilize women groups in the milk shed who are now fully participating in dairy activities. Farmer Field School (FFS) and SBO meetings are timed to avail women to participate having men and women agree on an appropriate time

(women have recommended morning or afternoon over early morning or late evenings times when they often other commitments). This has been strictly adhered to in the planning of the FFS and SBOs meetings.

Challenges

Program beneficiaries encountered a number of challenges during the year that KDSC worked to facilitate responses or solutions. The main challenge reported was the disease outbreak. The program responded by supporting training nine dip attendants from four dips in Nakuru milk shed. The trainings conducted covered dip structure, types of acaricides, ticks, dip management by-laws, committee elections, documentation, drug resistance and back up services of ultravetis.

Volatile milk market was also a challenge in the program area. The sudden lowering of prices by NKCC, a major raw milk buyer, affected the performance of SBOs and reducing volumes of milk available, as members opted to sell their milk to milk traders who were offering better prices.

Market distortion was also witnessed by the beneficiaries. Some development programs being implemented in the program area continue to perpetuate dependency attitudes by paying farmers and funding purchases or giving away inputs and dairy equipment.

Milk collection infrastructure has been poorly developed in the area. The program has continued to advise farmers on the need to have their own cooling units in their SBOs. However, based on the financial requirements, there has been a slow uptake of this aspect in the project area.

The approach of BDS that involves service providers as the main trainers has resulted into slow dissemination of information to dairy farmers in some of the areas in which the project operate. Some of the service providers have taken a longer time than expected to embrace farmer training as an embedded service.

Lessons Learned

1. The organization of farmer groups into business organizations has enabled dairy producers to increase their bargaining power with the processors.
2. Increased capacity building of service providers has resulted in increased sales of their products. Linkages between service providers and farmer cooperatives facilitated by KDSC have enabled farmers to invest in technologies like digital weighing scales, computerization, and biogas equipment at affordable rates.
3. Though the performance of SBOs was negatively impacted when NKCC lowered the purchase price, the price reduction only affected those without supply contracts. Accordingly it has reinforced the importance of having supply contracts with processors, which can be best facilitated through cooperatives.
4. The organization of farmer groups into business organizations has enabled dairy producers to increase their bargaining power with the processors. The formation of federations has resulted in increased milk prices at the farmer level and the same time qualifying of members for bonuses given by processors.

2.0 Introduction and Objectives

Land O'Lakes is implementing the USAID Kenya Dairy Sector Competitiveness (KDSC) program with the financial support of the United States Agency for International Development (USAID). KDSC is a five-year program that aims to improve Kenya's dairy industry competitiveness. Under this program, Land O'Lakes employs a market-driven value chain approach, utilizing a business development services (BDS) methodology. KDSC will help transform the Kenyan dairy industry into a globally competitive, regional market leader, with the overall goal of increasing smallholder household income from the sale of quality milk. Land O'Lakes is facilitating this transformation, while the industry stakeholders are leading it.

The program objectives are three-fold:

- Increase competitiveness of the Kenyan dairy sector through collaboration among sector stakeholders and increased capacity of public sector agencies to serve the needs of the sector;
- Increase marketing of milk meeting quality standards by producer-owned milk bulking/cooling businesses; and
- Enhance access to business development services and technologies.

In its implementation, the program pays particular attention to environmental and gender concerns and effects corrective action as appropriate. KDSC takes into account the varying roles, assets, knowledge and skills that men, women and youth bring to dairy farming. The program therefore facilitates the implementation of opportunities for integrating youth and family members into dairy value-chain economic activities.

Towards Strategic Objective 7

KDSC contributes to the USAID Strategic Objective 7.0 on "Increased Rural Household Incomes." The program is implemented through a range of activities grouped into three broad components. The components and the associated deliverables are:

Component I: Enhanced Capacity for Milk and Production Input Quality Certification and Market Promotion

Deliverables include:

- Increased smallholder household income
- Increased use of technology
- Improve and enact industry policies and acts that enhance competitiveness
- Develop and implement/enforce quality certification frameworks and work towards a graded payment system
- Dairy enterprises achieve national/international certifications and enforcing quality regulations on suppliers
- Increase feed marketed under new quality standards

Component 2: Dairy Smallholder Business Organization (SBO) Development

The key deliverables are:

- Producer organizations strengthened.
- Increased number of milk bulking centres (MBC) with Hazard Analysis and Critical Control Points (HACCP) and /or SBOs with national certifications.
- Increased raw milk sales by SBOs under agreements that pay premium for quality.
- Increased gross revenue of milk bulking/cooling businesses from sale of inputs and services other than milk.
- Increased number of SBOs transformed into sustainable businesses entities.
- Increased number of cooling units installed/rehabilitated by SBOs

Component 3: Availability of Dairy Business Development Services

Key outcomes/ impacts will include:

- Enhanced range of business services to producers.
- Increased value of services/inputs provided by business service providers.
- Increased number of smallholders purchasing private sector services at full commercial rates.
- New technologies or management practices made available for transfer.
- Increased number of dairy farmers receiving loans from financial service providers.
- Increased number of smallholders engaged in new, diversified dairy-related enterprises.
- Increased number of dairy farmers receiving short-term training.

Implementation Strategy and Key Activities

KDSC is implemented using innovative, international best practice approaches and methodologies that ensure achievement of expected results and sustainability of impacts long after the end of the program. Using local service providers and facilitators, Land O'Lakes, the implementing agency, supports market-based services/solutions, and action-oriented policy research to overcome both industry-level and enterprise-level constraints to competitiveness at key points along the dairy value chain. Industry stakeholders have since been engaged to identify competitiveness constraints, and propose solutions to these constraints.

3.0 Program Implementation

In the reporting period, the program continued to address challenges, constraints, and stakeholder concerns for the dairy sector and realized significant achievements. Program efforts especially focused on putting in place sustainable solutions to the challenge posed by increased milk production observed during the reporting period. As reported in the previous quarterly reports, the country has been experiencing increased supply of milk over and above the retailing capacity of the formal sector. This has led to the stockpiling of processed milk products, especially long life milk and powdered milk. Formal milk traders have responded by reducing farm gate prices—in some cases by close to 47% compared to farm gate price last year. This has led to a number of farmers opting to sell to informal milk traders though they were previously selling to the formal milk market through Smallholder Business Organizations (SBOs). This has implications especially on sustaining the realized farm-level productivity gains, on maintaining or growing household incomes (given the fluctuating/volatile manner of prices offered and reduced farmer bargaining power), and on assuring consumer safety due to the unhygienic manner in which some informal sector traders handle milk. To help solve this problem, the program focused on identifying and operationalizing sustainable solutions by working with SBOs to negotiate longer term contracts and supporting initiatives that would contribute to the expansion of both the domestic and export markets.

In an effort to stabilize milk price across seasons, KDSC is also looking into alternative domestic markets—both institutional and informal—for the SBOs working with the program. The program held formal discussions with the Dairy Traders Association (DTA) in some milk sheds about market options, especially in milk sheds close to non-milk producing areas and in main cities such as Kabete and TransNzoia where the DTA account for a significant proportion of milk traded. To guard consumer safety, the program is evaluating proposals from DTA such that will improve their organizational capacity to train members on milk handling and hygiene. Once finalized, these SBOs will be able to diversify their markets and realize stable returns across seasons for their members. Accordingly, these SBOs should be able to grow their membership, and thus increase their bargaining power through increased traded volumes.

Detailed activities and achievements during Year 4 are summarized below and are organized by program component. KDSC facilitates interventions impacting the dairy sector in three components:

- Activities that enhance the quality of inputs and products, including advocacy measures and reviews of policy and standards;
- Activities that build the capacity of smallholder business organizations and improve farm-level productivity; and
- Activities that aim to expand access and availability of business development services in the sector.

3.1 Component One: Enhance Capacity for Milk Production Input, Quality Certification, and Market Promotion

During the period under review, the program embarked on building the capacity of livestock genetics suppliers for the dairy sector. Rhoteach consultancy firm was engaged to build capacity for genetics suppliers in dairy sector following the formation of Kenya genetics association. Rhoteach undertook key activities such as developing the standards for accreditation of AI service providers, creating linkages for institutions offering refresher courses, building capacity of service providers to better communicate the benefits of animal registration to farmers, identifying financial products that support AI service providers and to defining action plans to improve performance of dairy breeding.

The program also engaged AHEAD consultants to build capacity of the feed manufacturers association. A key output of their task was to link accredited AKEFEMA members with the SBOs working with the program. AHEAD also helped AKEFEMA to develop accreditation procedures and assisted to ensure that a minimum of 20 members are accredited. Other results included developing a code of practice and creating a data bank of nutritional specifications based on local materials. The consultants trained three feed manufacturers (Lens, Bunda, and Molapulus) and five SBO committee members in Nakuru milk shed. The training topics covered the contractual agreements and dairy cow nutrition, focused on dairy meal and quality parameters and. AHEAD consultants successfully completed their mandate of building the capacity of the feed manufacturers association. A total of 20 feed companies signed the contract with SBOs to effect the provision of high quality feed to members of those cooperatives.

An animal registration program began with KLBO and Kenya Stud Book (KSB) that aimed to increase the value of dairy cows for its members. Due to the intervention measures promoted by the program to increase the value of the dairy animals in the program area, KDSC service providers and collaborators registered a total of 12,193 dairy cows with the Kenya Livestock Breeders Organization during the period under review. This is envisaged to contribute in the upward valuation of the registered dairy animals and result in a premium sales price when the animals are sold. In Lessos milk shed, KLBO trained service providers on documentation procedures for basic cow registration documentation, which will allow these trained service providers to complete cow registration forms on behalf of KSB and to have the SBOs forward the forms to KSB for official registrations. Issuance of official registration certificate to the concerned farmers as per their best practice standard has also been expedited. In Gatanga milk shed, the program is working with the farmers using trainings to sensitize them on the value of animal registration with the KSB and KLBO.

The KDSC program has strengthened the partnership with the Dairy Traders Association (DTA). DTA is represented on the production and marketing sub-committee at the Dairy Task Force and at the Milk shed Working Groups. These committees have been working actively throughout the year in order to achieve the objective of producing and selling of high quality milk from the linked producers as well as all those within the entire dairy value chain. During the year, the Milk shed Working Group (MWG) and Animal Production Society of Kenya (APSK) organized a national symposium which was attended by participants from all over the country and facilitated by the project in collaboration with other stakeholders in the dairy industry. The event was launched by Mr. Ken Lusaka, Permanent Secretary, Ministry of Livestock Development (MOLD) and Mr. Kiptarus, Director of Livestock Production. There

were presentations of scientific papers by researchers from MOLD and Kenya Agricultural Research Institute (KARI). The milk analysis laboratory is operational and the personnel in charge of the unit are working closely with MWG committees on quality and production and to collect samples to test for butter fat and protein.



Figure 1: Director Livestock Production Mr. Kiptarus with his staff during an APSK field day at KARI Kitale

During the period under review, the Kenya Dairy Board (KDB) organized a massive campaign to eliminate milk hawkers in Londiani Town and its environs in Kericho milk shed. This has had a positive impact to Ruskebei Dairy which sells milk to the local consumers at a price of KShs. 30 (\$0.34) per litre. Consumers are assured that they are buying clean and quality milk because of the milk testing procedures and cooling system operated by the society.

The program finalized the development of an industry-wide web-based application that serves as a complete dairy and livestock management information system for the livestock industry. The application has been able to provide an easy interface for initial and subsequent data collection and analysis. It has also enabled and enhanced information sharing among stakeholders in the sector.

More details for selected Component One activities and outputs realized during the reporting period follow below.

Milk Quality Improvement Program

The KDSC program interventions targeting milk quality improvement have included provision of technical assistance in the review of dairy standards and facilitating training of KDB regulatory inspectors on Pasteurized Milk Ordinance and Regulatory Inspection. The program has also helped expose the inspectors to the American regulatory inspection systems, practices, and techniques especially the U.S.

Pasteurized Milk Ordinance which is seen as critical to ensure milk quality through the value chain. Program efforts have also targeted developing and providing access to reader-friendly industry standards and manuals in collaboration with the KDB and other stakeholders.

The KDSC link with DTA is also important on the production and marketing sub-committee at the Dairy Task Force and at the Milk shed Working Groups. KDSC reinforced the agreement to share information and undertake activities to improve the committees' operations and performance. KDSC has been in the forefront in promoting consumption of high quality milk in the country. During this period, KDSC strengthened DTA so as to enhance quality milk consumption by the public. DTA has expanded its membership tremendously in order to reach more members. Through the support of the KDSC, there has been change in policies regulating the dairy sector. With commitment from all stakeholders in the dairy industry, there has been a constant increase in membership of the DTA owing to the new government directive that milk sales in municipalities was outlawed in January 2011. This has contributed in having more members joining to benefit from the planned cottage pasteurizing unit that DTA is planning to construct. The program has also agreed with officials on plans to capacity build DTA on the requirements of a processing plant and to conduct a business analysis to assess the feasibility of that venture. DTA membership has and is contributing capital for the venture in the amount of Kshs 2,000 (\$22.99) per member. In this regard, KDSC project builds the capacity of farmers so that they can own their own milk cooling plants within their localities after which the processors can be able to collect the milk with minimum losses.

During this year under review, DTA has 200 registered traders with an average of 40 farmers each giving a total of about 8,000 smallholder farmers within Nakuru milk shed that are contracted by the DTAs. At the same time, Nakuru milk shed is exploring ways on how they can reach the smallholder farmers working with the DTAs so that they can benefit from KDSC capacity building program. Through the support of the KDSC, there has been change in policies regulating the dairy sector. In Gatanga milk shed, members of the DTA continued to provide alternative market for the milk the formal sector was unable to collect and process. However, it is noted that they offer unfair competition because they are not strict with quality standards. This is one area that the MWG is working on.

DTAs have continued to offer competition to main processors especially during the dry season due to milk deficit in Western Kenya. DTA paid up to Kshs 40 (\$0.46) to farmers compared to a high of KShs 31 (\$0.36) offered by New Kenya Cooperative Creameries (NKCC). The DTA marketed their milk at KShs 60 (\$0.69) per liter. A total of 1.88 million liters of milk was marketed in TransNzoia milk shed through the DTA during the period under review. The association through the chairman requested to be facilitated in training on quality and marketing in conjunction with KDB.

KDSC emphasized market expansion to cushion the impacts on supply and prices caused by increases in milk production during the period. In order to produce high quality milk meeting the EAC Dairy standards and other technical requirements as stipulated in the drafted dairy regulations particularly at the farm level, farmers will incur additional costs in acquiring the appropriate milk handling containers, enhancing hygiene, and organizing for quick milk delivery to the milk collection centres. However, the benefits of improved milk quality are substantial and cannot be over emphasized. Kenya Dairy Board in

collaboration with stakeholders is therefore developing a framework plan of differential payments for quality and planning a pilot trial-run in the coming months under guidance of a KDSC consultant.

The launch of the milk quality improvement program is the foundation for substantial improvement to milk quality in Kenya. It will aid sector players to implement the basic requirements necessary for milk hygiene that can ensure consumer safety and boost regional and international trade. It is particularly important now that the East African Community (EAC) has adopted a free trade area, which is expected to contribute to Kenya's vision 2030 of halving poverty and/or improving income to the middle income level.

Review of the Kenya Dairy Regulations

The program initiated an activity to review the proposed Kenya Dairy regulation and enable the document be passed into law in the quickest possible timeline. This activity was initiated during this year under review so as to make the established regulations already drafted by the program to become effective after being passed into law. In this regard, ARC consultants was contracted and tasked to carry out the activity during the period under review. The already drafted Kenya Dairy Regulations lay the foundation for all the other components in our quality programme. The regulations describe the requirements for production, storage, transportation and processing of milk and milk products along the chain. The regulations also give technical specifications for processing equipment and quality surveillance. Individual sections of the regulations deal with each link as the milk progresses from the cow to the consumer. The new Dairy Regulations have been reviewed and approved by stakeholders. Adoption of these detailed technical requirements represents a leap in technology and competence for our industry. It is therefore expected that once the review of the draft is complete, the Dairy Regulations will be legislated under the existing Kenya Dairy Act later during the next reporting period.

Increased Uptake of Technology

The program has continued to promote the uptake of appropriate agriculture mechanization and information technology in all the milk sheds. During the period under review, a total of 1,943 chaff cutters were purchased by smallholder farmers working with the project. A total of 1,098 chaff cutters were bought in Kabete milk shed while Lessos and Nyeri bought 412 and 271 chaff cutters in that order among others. The SBOs have come to appreciate the use of the pulveriser as dairy farmers from the program area and purchase mainly from the SP Simba machinery who works also with the project. Maina Mugi who is a Service Provider (SP) of Kitiri and also a demo farmer bought a chaff cutter and a generator that has a water pump worth kshs 60,000 (\$689.7) during this period. The purchase and use of chaff cutters have contributed greatly in improving feed utilization efficiency/reduction in feed wastage.

With regards to computerization, a total of 64 cooperatives purchased computers for their daily use with 29 of them having internet connections which have managed to hasten data handling. The program has planned sensitization of the SBO management on the need to move forward and install milk cooperative business software available for easier handling of bulk data. Nine SBOs have installed coop works in their systems. The manager of Kirichu dairy Ms. Rose Maina has been prompted to undergo a

course in computer packages sponsored by her cooperative. This is geared to assisting the dairy cooperative to embrace computer technology to enable it manage information efficiently.

The Program facilitated the purchase of 148 digital weighing scales during the period under review. Through adoption of digital weighing scales, the SBOs have managed to win farmers loyalty as they trust the measurements used as being transparent unlike before. At the same time, a total of 3,301 aluminium cans were bought by dairy farmers to enhance delivery of high quality milk. In this period also, smallholder farmers in the cooperatives managed to purchase 372 lactometers.

During the period, the program has been in the forefront of improving the quality of milk through promotion of value addition technologies. A total of 33 SBOs have started carrying out value addition in milk and five SBOs are adding value in feed. In Lessos milk shed, three SBOs namely Bidii, Sugoi and Kipsamo started value addition of their milk where by SBO members have started making cultured milk (mala) and yoghurt of various fruit flavours. Another SBO (Seum cooperative) from TransNzoia milk shed has embraced value addition of feeds through urea treatment technology. Over 300 bags of maize stovers were ground for value addition and subsequent feeding to the animals, which improves their condition and increases milk production. Training is being undertaken on relevant topics in dairy production and management.



Figure 2: Mr. Misosi from Surungai receive a digital weighing from Mr. Pascal of KDB

Enhancing Milk Market through Facilitating Processor's Capacity

During the year, the program undertook an activity geared toward improving the performance of Lari Dairy Alliance LTD. This undertaking followed a request from Sundale processors to assist Lari Dairy Alliance Ltd. (LDA) in turning around their milk processing business. After completing a diagnostic workshop and issuing a request for proposals from qualified consultant firms, Corporate Consultant

Services (CCS) was identified to offer various business turnaround and capacity building foundational services. If necessary, KDSC program will provide technical assistance for CCS during implementation for a period of one year with possible renewal based on the performance. CCS has carried out the study of the LDA and recommended initiatives that will enable in turning around the operations of the dairy processing plant. CCS team also identified immediate strategies to be used as stop-gap measures to keep the plant from becoming redundant. As an outcome, the firm facilitated the operations, overseeing a steady supply of milk to the facility and issuing prompt payments to the primary producers. The consultants also completed a long-term turnaround strategy and will likely request technical assistance from the KDSC Kinangop team during the implementation and until LDA restores operations to full capacity and optimum performance.

LDA Ltd. (Sundale) successfully rolled-out a number of measures to improve operational efficiency, including:

- Reducing staff at the processing plant by 50% to reduce the cost of operations;
- Installing a yoghurt batch pasteurizer that processes 5000L/day;
- Installing a furnace oil boiler to replace an automatic diesel unit that will reduce energy cost by 90%; and
- Offering rebranding and new packaging for the 500ml fresh milk pack product.

Development of Dairy and Livestock MIS (<http://www.KDSCmis.com>)

The program finalized the development of an industry-wide web-based application that will serve as a complete dairy and livestock management information system for the livestock industry. The application provides an easy interface for initial and subsequent data collection and analysis and enabling information sharing among stakeholders in the sector. The system has modules for all the actors in the value chain: farmers, farmer groups, processors, insurance and financial institutions, semen distributors, and animal health providers among others. Industry stakeholders have been sensitized on benefits of industry site, resulting requests for additional modules. Private breeders were the latest stakeholder group to request their own module. This can help link the breeders to prospective customers throughout the country. There is no exhaustive list of livestock breeders in the country at the moment. Program staff continue working with farmers to register their details in the portal and prepare them for possible expansion of their business opportunities.

Using the e-market place, the buyers would be able to search for and find the range of products and services most relevant to them and also compare the prices. Buyers can also write testimonials for the products and services or read testimonials written by other buyers. Buyers can visit the website of the supplier through link provided on the supplier's profile. The program facilitated the training of coordinators from all eight milk sheds as well as AKEFEMA representatives that cover 70 feed manufacturers.

During the period under review, an "E-mailer" was sent to 200 relevant companies which include, feed manufacturers, processors, AI suppliers, financial institutions. A bulk SMS campaign has been planned for 5,000 Agro-Vet shops across Kenya (the database already available). Additional bulk SMS campaigns

are planned for 5,000 relevant feed and agricultural product manufacturers (the database is currently being built) and for over 1000 veterinary doctors, AI technicians, and possibly other stakeholders.

The finalized industry-wide web-based application has started serving as a complete dairy and livestock management information system for the livestock industry. During the period under review, a total of 11,941 farmers have registered in the e-dairy market place out of which 3,675 (30.8%) are women. At the same time, a total of 28 dairy processing companies have registered and listed their products in the e-market place. Others in the e-portal include SBOs (70), Veterinary centres (4), Veterinary officers (51), AI service providers (120), banks (45) and insurance companies (42).

The program is now initiating an evaluation of the e-dairy portal, which will assess the sustainability of the web-based dairy portal, evaluate solutions for hosting of the system, and identify usage at cost-effective level by all stakeholders. ANDEST BITES Ltd. was contracted to evaluate the performance of the e-dairy portal and report the findings. During the upcoming quarter, ANDEST BITES will report the findings of the evaluation to guide the industry to understand how to sustainably manage the system after the exit of the KDSC program.

Collaborative Activities

The KDSC team collaborated with Kenya Dairy Board to organize the training of the Nakuru raw milk traders on cottage milk processing and new business management skills. This was to help them survive the new, January 2011, regulations that outlaw the sale of raw milk in municipalities. The team also aided them to identify the appropriate equipment and negotiate for affordable prices.

The KDSC team has continued its collaborative work with other stakeholders in the dairy sector. During the month of March, the government officers in Nakuru milk shed supported the program as the meetings were held in Mumberes, Ngorika, Tuungane and dip attendance in Koibatek. The training involved good dairy practices and management of dips. The dip attendance meeting was conducted together with a supplier, Cooper Kenya. The Ministry of Cooperatives have managed to conduct election for Tuungane Cooperative Society and current management will undergo capacity building training to fully understand their roles. KLBO has a memorandum with KDSC Lessos in which it was agreed that KLBO will train the service providers contracted by the dairy farmers' organizations partnering with the KDSC Lessos milk shed. KDSC role is to mobilize the dairy farmers organizations (SBOs) and help select and contract business service providers. KBLO trained service providers to play the role of filling in cow registration forms on behalf of KSB and to have the SBOs forward the completed forms to KSB for official registrations and issuance of official registration certificate to the farmers. Animal registration and certification is a best practice standard. Kenya National Federation of Agricultural Producers (KENFAP) and KDSC continue to popularize and facilitate farmers' access to biogas technology. Farmers have been shown and have appreciated the benefits of biogas and many more farmers are taking-up the technology, including direct beneficiaries of the project. All biogas technology is constructed using a cost-sharing basis between the client and the bio gas project being implemented by KENFAP.

Development of Bankable Business Plans

All the SBOs working with the program have developed action plans to be implemented in the fourth year of the project. Each of these action plans have been evaluated with the technical assistance offered by KIE consultants, which was contracted by the project. In particular, KIE helped SBOs in each of the milk sheds to prepare bankable business plans. About 50 percent of the action plans developed for SBOs are "bankable", with 54 business plans acceptable and presentable to financial institutions. KIE itself, Family Bank, and a number of cooperative banks have started evaluating the business plans, offering increased opportunities for funding in the coming year for the dairy sector.

Formation of North Rift AI Providers Group

KDSC facilitated the formation of North Rift AI providers group to enable efficient and coordinated activities regarding the services offered by AI service providers in TransNzoia milk shed. The AI group through the guidance of the program has continued to grow and greatly increase the total sale of semen. In collaboration with KDSC MOLD, WWS, ABS, Pokea Farm and ADC, the group facilitated the official launch of a distributorship that was attended by animal health technicians, AI technicians, and many farmers.



Figure 3: Chairman North rift AI Project Chairman Mr. George Kamau addresses participants during the launch

Coordination of ESADA conference

In order to increase the volume of milk meeting the international standards, the program promotes activities that enhance exchange of information and the use of technologies among the stakeholders in the dairy sector. In this period, the program facilitated the attendance and participation of service

providers on cost-sharing basis at the ESADA conference. KDSC also participated in the conference and facilitated preparation and capacity building of members attending the conference.

The project supported 16 organizations representing the entire dairy value chain to participate at the 7th African Dairy Conference and Exhibition. KDSC supported the exhibition space for the 16 companies to showcase their products and build trade relationships and contacts. The participating companies applied, registered, and defined the space requirements. The 7th African Dairy Conference and Exhibition provided a platform to benchmark and learn from leading dairy players, to promote products and services, and to develop trade networks. This year the event was held in Dar es Salaam, Tanzania in May with the theme “African Dairy: The Next Dairy Frontier”. The conference is an ideal platform for showcasing modern dairy equipment and new technology and innovations, including animal health supplies, milking systems, feeding products, forage handling, manure equipment, plus embryo, semen, and genetic research.

During the event, leading dairy practitioners, scholars, technology suppliers among others presented on various issues, emerging technologies and best practices around the world and industry success stories among others at the conference sessions. There was one full day and two half day sessions covering the topics that included: the World Dairy Status; Dairy Policies and Economics in Africa; Dairy Farming (Animal Feeding and Breeding); and Dairy Science and Technology (Packaging and Processing). Other areas covered were Milk Production (Quality, Quantity, Hygiene and Safety); Food Science for Nutritional and Health; Dairying Dynamics, Animal Health and Farm Management; Dairy Marketing and related dynamics; Industry Sustainability, Gender and Environment; and Cooperatives Management, Value chain Efficiency and Building Competitive Edge in the Industry.

In order to have a good mix of players across the value chain, small-scale entities involved in the value chain were identified. These include feed manufacturing, machine fabricators, animal medicines, AI services and genetics and processors. Targeted companies were sent an email with information about the upcoming event and there was a follow up of the email by a telephone call. For several companies a physical visit to present the conference and exhibition proposal was necessary and also to collect the signed forms.

The members who attended the exhibition provided feedback that the event should be planned in such a way that there are more days to show dairy products and equipment. While at the same, there was an outcry for more open days to better engage the public in the dairy industry. Many farmer and business representatives, who attended the exhibition, reported that the event revealed trends and technologies in the market that if they put into use would enable dairy farmers to improve their economic status. As reported in Table I, the exhibitors registered a good number of visitors during the three day event and some of them recorded tremendous sales of their products and technologies.

Table 1: Exhibitors Sponsored by KDSC

	Exhibitor	Approximate visitors to the stand	Comments
1	ABS-TCM	180	
2	Happy Cow Ltd	213	Good prospects for supply of cheese to Tanzanian markets follow-up in progress
3	Coopers (K) Brands	178	Exact data not available from Tanzanian group
4	Sunbeam technologies	296	2 quality systems and other follow-ups in Progress
5	NakuruSimba machinery	300	7 machines, 12 on follow-up, Lots of request to go do demos again.
6	Bicycle Relief Organization	277	8 bicycles on follow-up
7	United Business Solutions (UBS)	189	6 heavy duty scales; 11 light duty scales; 36 follow-ups in progress
8	KLBO	242	Good contacts with leaders for farmers with prospects of exporting cows
9	Livestock Association Genetics	242	Good contacts
10	Embryo Association Transfer	242	Channels open for later trade talks
11	Super sires	189	Good contacts
12	Desley Holdings	252	Good contacts
13	Worldwide sires	149	Good contacts
14	Sunpower products	152	Good contacts
15	Eldoville Farm	138	Good contacts
16	Sigma feeds	173	Good contacts



Figure 4: Kimani of Nakuru Simba Machinery receiving a certificate of attendance from the Minister for Livestock and Fisheries Development, Tanzania

Market Promotion through Kenya Livestock Breeders Show/ASK Shows

The KDSC team continued its collaborative work with other stakeholders in the dairy sector. During the period under review, the KDSC collaborated to organize the 2011 Kenya Livestock Breeders Show and Sale. The event took place in June and had over 70 business exhibitors and over 60 livestock exhibitors. As a way of encouraging farmers to attend the Livestock Breeders show, KDSC sponsored farmers to attend the event, by paying entry fees for some dairy farmers working with the project. In the eight milk sheds that KDSC operates efforts were made to encourage farmers to attend the show. In other milk sheds farmer outreach was conducted through the Kenya Dairy Farmers Federations and Milk Processors that operate in the areas.



Figure 5: KDSC Stand during Kenya Livestock Breeders Show

The Livestock Breeders show was well attended with over 10,000 farmers attending the show according to the organizers. Over 2000 farmers visited the KDSC stand to learn about dairy-related issues.

Also during the program year, an exchange tour was organized by NKCC for dairy farmers from Gatanga milk shed. Farmers visited Mr. Wilson Kyalo's farm (Ivaini Farm) in Machakos and later to the NKCC processing plant in Dandora. The processor sponsored farmers from Murang'a County who sell milk to NKCC. The processor paid entry fees and the farmers met the transportation costs. The participating farmers received training on animal breeding and management, bull selection, dairy cow feeding, general dairy management, calf rearing, and dairy farming as a business. At the NKCC processing plant farmers were able to see the various products that are processed in the plant and control measures taken to ensure that end product is of high quality. Technicians from NKCC also addressed farmers on Good Manufacturing Practices and urged farmers to be attentive to quality issues at the farm and in handling milk. Farmers were informed that the industry is changing and the processor is interested in negotiating and signing contracts on the basis of milk quality. The processor also promised to provide one milk analyzer to be used at Kangema plant.

New Technologies or Management Practices under Research

In collaboration with other partner, KDSC has initiated a total of 11 new technologies under research that can increase the productivity of dairy cows in the program area. In collaboration with KARI, the program has begun researching application of various technologies including, molasses block, mastitis kits, foot-and-mouth disease vaccines, and animal feeds such as lucerne, sorghum and multipurpose potato vines. The other technologies under research with Kick-start involve water harvesting technology, while Mola+ works on digestibility. Other research interventions are evaluating the use of milk trailers (motorcycle) and use of mobile chaff-cutters powered by biogas.

3.2 Component 2: Develop Dairy Smallholder Business Organizations

In this component, the KDSC program continued linking small business organizations (SBOs) to inputs and services to enable these organizations grow their businesses. During the period under review, the program reached a total of 42,977 additional households resulting into a total of 248,275 households having benefitted cumulatively. This shows that the project has reached 99% of the beneficiaries in this period. The female members benefiting since the start of the program total to 109,241 that accounts for 44% of all beneficiaries. At the same time, the program facilitated the establishment of ten new SBOs during the period, adding to a total of 124 producer organizations being strengthened over the life of the program. Impacting this number of SBOs achieves 100% of the program target, which has been possible due to high mobilizations by the facilitators. The intervention of the program in the entire project area has recorded positive results.

The performance of Seum Dairy Cooperative Society is an indicator of uptake of the intervention measures promoted by the project. The management committee of Seum Cooperative attended a training organized by KDSC on milk bulking and marketing. The SBO benefits from being affiliated with Cherengany Dairy Group because Cherengany pays milk bonuses to federated co-op members. KDSC facilitated federation arrangement. The group is now providing AI and dipping services to the members and none members are at a differential price scheme. Farmers from the Seum are adding value to maize stovers by treating the same with urea and yeast and then feeding mix to the cows. As a result cows are producing more milk and have better health condition especially during the dry period. Farmers have embraced value-added activities for feed, using urea treatment technology and have ground and added-value to over 300 bags of maize stovers. SBO members have joined training offered on relevant topics in dairy production and management. Group members have purchased 20Kg of fodder yeast and 10 pieces of silage tubes to add value to maize stovers for feeding to their animals during this drought period.

The success of Ichichi SBO in Gatanga milk shed has led to growth of business development services related to dairy around Ichichi market. After the collapse of the Githambo dairy, many farmers neglected dairy farming and thus greatly reducing the demand for dairy business services. However, through the facilitation of the KDSC program, there are currently four agro-vets operating in the market, who were not there before Ichichi dairy farmers formed the SBO. The program has also been involved in farmer training in the area in the form of demonstrations and exchange visits. Exchange visits have been very instrumental in changing many farmers' way of feeding their animals. For example, a

group of 14 farmers who attended a Nairobi show where they learned about good dairy cow management have experienced dramatic improvements in milk production after implementing practices learned at event. One farmer who was producing 510 kgs of milk now gets 1570 kgs per month from the same number of dairy cows. In fact, all farmers from the SBO deliver at least 10 litres of milk per day to the dairy, with some producers delivering as much as 60 litres per day. Similarly, SBO member dairy farmers who attended to another exchange visit in SabaSaba where maize silage was emphasized have reported introducing maize crops for silage making purposes. Ichichi dairy farmers are also offered a growing number of member services from their SBO. The group started by only collecting and marketing milk, but in 2009 they were able to introduce feeds inputs for member, which are paid for through check-off system. During recent quarter, they began offering AI and animal health services to farmers via a check-off system.

Through the interaction with KDSC program the group has implemented improved recordkeeping for the SBO after completing training offered by the program. They started with manual recordkeeping but when the program sensitized the management on the use of computers to improve efficiency, the manager started outsourcing computer services. This helped the group to reduce errors and time required for preparing the records, especially for monthly payments. In recognition of the positive results realized by the group, Personal Development Company donated a computer to the group. This has further increased the group efficiency as the time for preparing farmer payment records now takes only one day, when it previously it used to take five days. Computerization has also enabled payments to farmers to be made different bank accounts as opposed to previously only paying farmers through Muramati SACCO. The computer, which is fully equipped with the printer and modem, has also reduced printing expenses because they their own printer, instead of paying an outside printer.

This has also been one of the SBOs that have shown tremendous improvement in performance in the past year. The group sells its milk to New KCC through KIKAMA SBO and is currently collecting over 750 liters per day as compared to 100 litres per day previously collected in 2008. This increase has been attributed to the various farmer trainings that KDSC has conducted, particularly exchange visits. It is also seen as a result of better milk prices that KCC is offering compared to the recent past. Also milk rejections have gone down due to improved milk handling practices, developed through the KDSC training. The SBO also acquired a computer that is helping the SBO manage its data. It is now possible to generate the daily and monthly statements more efficiently and with minimal labor. The group also uses its computer to analyze business performance results on daily or monthly basis as well as per farmer basis. SBO management are accessing training information management and how to use a computer.

The group took out a loan in order to pay farmers' for September milk deliveries, which the processor had not paid up to date. The SBO has also had a slow start in LFFS which the manager attributed to farmer sluggishness as result of the price events in the milk market. The increase in milk collection and attendant decline in milk rejection has led to a significant improvement in overall performance and earned the group a growing surplus. The KDSC program implements its activities in SBOs mainly through trainings conducted by program staff. In order to reach more members, the program has expanded its operations into new regions during the period. As shown in the photo below, the KDSC has entered Marakwet region where dairy farmers have been introduced to dairy development

technologies that can make dairy production a profitable venture for farmers in the region. The program therefore started training farmers on organizing milk bulking in the area. As a result farmers in Marakwet have for the first time started bulking and selling milk cooperatively.



Figure 6: A section of the farmers who attended the milk bulking meeting held at Kimnai trading center on the 16th November 2010 in Marakwet west.

Facilitated Working Linkages between Farmers the SBOs Working with the KDSC

The program continued providing information on input supply sources, linking producers with the suppliers, linking businesses/enterprises to financial service providers, and helping SBOs and service providers meet conditions to access credit. KSCP also provided market information and access to business services and provided training and technical assistance to the producer groups. During the period under review, a total of 263 SPs were linked with SBOs in the program area. This has been achieved due to overwhelming response by the SPs to business opportunities presented by the dairy sector. Due to the increased number of SPs there has been an increase in technological transfer and increased purchases of dairy machinery, ICT accessories like digital weighing scales, computers, pulverisers, and chaff cutters. The SPs have also contributed to the program's increased number of beneficiaries and delivery of training and technical assistance in the program area.

Market Access Services

KDSC continued delivering market information, facilitating market linkages, and supporting market research for the producer groups working with program. The program engages cooperative members with the aim of bringing together more members of different cooperatives under one organized unit and enabling the groups to market bigger volumes of milk to processors that will entitle members to earn bonuses. In TransNzoia milk shed, the program facilitated the formation a federation during this quarter. The federation is proving successful and is bringing the farmers in the milk shed together.

In the process of improving market access of milk in the program area, the KDB participated in training the SBOs on quality control and sensitized the SBOs on the importance of bulking in this period under review. During the training, the KDB personnel stressed the importance of bulking milk in order to improve their business. In TransNzoia milk shed, the chilling of milk is being compensated at Ksh1 per liter by NKCC. KDB worked very closely with the KDSC in enhancing marketing cooperation between the existing SBOs and Self Help Groups in order to come up with viable bulking units. During the period under review, the KDB manager facilitated the formation of a federation between Iten (Keiyo gaa) and Progressive Karona.

The impact of the project was realized during the period under review. From Lessos milk shed, the price of milk reduced from Ksh 30 (\$0.34) to KShs 23 (\$0.26) for non-contracted farmers while farmers working with the program under valid contract continued to enjoy the prices agreed with the processors. This has been a good encouragement for those who had signed the contract. The impact of federation was observed in Cherengany Dairy Group (CDG) during the month of March 2011. Even though the production dropped to less than 10,000 litres a day, the prices remained constant at Ksh 31 (\$0.36) as their contract was reviewed after the intervention of the program. The Cherengany Group is working closely with KDSC to ensure all the groups in TransNzoia federate with them to earn volume bonuses and to eventually form a company to market the milk and later begin processing. A stakeholder's forum which met twice in the month concluded that CDG transform from a self-help group to a cooperative and that a company be formed where all groups marketing milk or individuals interested can buy shares. Surungai, Seum, Koitogos, Kipsaina, Meeboot, Naitiri and Tongaren are marketing their milk through CDG and all earning better prices compared to others outside of the federation.



Figure 7: TransNzoia Coordinator, Mr. Isaac Kamau explains breeding techniques to the Kenya's Prime Minister, Raila Odinga (with a hat)

Training and Technical Assistance

Through the technical assistance activities from KDSC, a total of 54 business plans were finalized during this period and these will continue to guide the SBOs and were reviewed and revised by KIE to make them more bankable. In light of this, some financial SPs are considering funding a number of the SBOs, possibly using check-off system for repayment. The SBOs will also follow the business plans to guide decision making, to determine the viability path, and to impact business transactions.

Input Supply Services

SBOs in the program are linked to input suppliers, equipment suppliers, and other service providers in addition to milk bulking and cooling. The program facilitated the purchase of more pulveriser machines by farmers in Marakwet through providers from Nakuru. The SBOs and members have come to appreciate the use of the pulveriser, as the North Rift groups bought 300 machines from the SP Simba Machinery.

Exploring an Alternative Aarket (Kabete Milk Shed)

In June a meeting was held between Kabete milk shed coordinator and Maziwa King Team who are currently retailing 1,000 litres of pasteurized milk through on-site and mobile dispensers. Maziwa King is also negotiating with Tuskys supermarket for a tender to supply 7,000 litres daily through the supermarket's established dispensers in Nairobi. They also plan to lease nine dispensers to traders help establish a specialized dispenser milk re-filling and distribution business. The team is currently buying from a pasteurizer at Ruai at a price of Ksh 36 per liter (\$0.42). The facilitation team also met with a dairy equipment dealer specializing in milk dispensers and pasteurizers, to better understand available technology and prices. An innovation in dispensing equipment using a normal 50 ltr milk container for is already been introduced to the Kenyan market. This equipment can be put in use at about half the price (Kshs. 300,000 \ \$3,529) of standard equipment thus making it affordable to dairy traders. The project team is developing a sales model and a marketing solution that can be coordinated with industry participants SBOs (suppliers), traders (buyers/retailers), financial institutions (financers) and transporters (distributors).

Facilitated Capacity Building of over 39,232 Dairy Farmers in the Year

During this reporting period, the program facilitated capacity building of over 39,232 dairy farmers in the period under review giving a total of 90,434 members trained since the beginning of the project. This shows that the project has achieved 72% of the target by end of Year 4. Program interventions focused on training dairy farmers to equip them with the necessary technical skills to increase herd productivity and incomes. The training forums, organized in collaboration with key stakeholders such as private service providers, Ministry of Livestock extension personnel, and Kenya Dairy Board (KDB) covered diverse topics such as feed/fodder production, appropriate feeding regimes, feed conservation and formulation, modern breeding techniques, and milk handling and hygiene. Other areas covered included animal infertility, dairy as a business, and disease control. Trainings emphasize on-farm demonstration of

feed conservation techniques to enable smallholders conserve feed to stabilize milk yield and farmer incomes.

In order to reach the maximum number of farmers in this period, a total of 234 livestock farmer field schools (LFFS) were established. Each of these LFFS had averagely 25 members. At the same time, 136 demonstration farms were set up which enabled more members to be reached. Other members were reached through field days and ASK shows.

The KDSC program requires private service providers to offer and deliver training to farmers. This, in part, has increased the challenge to deliver training to the targeted number of farmers. The majority of service providers still do not see value in training farmers and expect to be paid by the program. The service providers who understand and appreciate this model of extension provision have, however, adopted the idea and are training farmers as part of business promotion. The second challenge has been the low milk prices that have been prevailing locally since January of last year. Farmers have been complaining of the low prices or even non-collection of milk by processors in some instances, and ask why we want them to increase production when their milk will not be collected. This also has led to a decreased number of farmers willing to attend program organized training events. Attitudes are, however, changing with the slight increase in milk price and because of program efforts to identify alternative markets and outlets for milk. The program has prioritized sensitization of farmers on the benefits of joining organized societies like cooperatives and federations of SBOs and co-ops. Through the formation of federations, some of the dairy farmers in TransNzoia milk shed joined Cherenganyi federation consisting of Seum, Rongai, and Koitogos farmer cooperatives. In this federation, dairy farmers have been able to negotiate the price of milk with NKCC processors from as low as KSh 24 (\$0.28) per litre to KShs 32 (\$0.37) per litre for a volume of 7,500 litres per day. The contract remains valid for the next six months.

Tulaga DFCS Goes Digital

Tulaga Dairy Farmers Cooperative Society was started in 1964 and has never closed its doors for its members even though it has sometimes gone through tough financial conditions. In 1992, it had experienced financial constraints until the staff had to work for three months without salary according to the Manager, Mrs. MilkahThiong'o. By that time, the cooperative was only receiving 1300 litres of milk per day and had no stores for dairy inputs.

Due to hard work and dedication of its management committee and staff, the cooperative currently has 9 stores across the catchment offering both animal products and human consumables. It has a total of 2100 active members delivering milk every day and collects milk from its members from their farm gate. In this case, the coop hires donkey carts to collect milk from farm gates of their farmers to points where the trucks can pick the milk.



Figure 8: MilkahThiong'o, Manager Tulaga DFCS using her IT compliant coop works

In terms of infrastructure, the cooperative has 2 trucks that help in transporting milk, a 5000L capacity cooling tank and butter processing unit being installed. Tulaga has a total of 35 full time employees. It has been able to collect a total of 13,500 L/day which shows a major improvement compared to when it started. The main market for their milk is Brookside which collects their milk and pays at KShs 30 (\$0.34) per Litre of milk. This is based on the contract signed that pegs that price to milk delivered if between 8,000-13,000L/day by the coop. The coop thereafter pays the farmers per liter of milk delivered at KShs 25 (\$0.29) which is relatively better than the prices offered by the hawkers in the area. According to Milkah, the manager, Tulaga DFCS has been able to provide inputs and food stuff to its members through check off system. Other benefits include school fees, NHIF, advances and stable milk market. These have enhanced member loyalty to the cooperative society.

The other achievement that came out outstanding was the computerization of the Tulaga premises. Through the partnership between the Government and FAO that funded the pilot of the IT, the coop has benefited from this computerization that was done by coop works. The system consisting of a server, four computers and two printers have been able to modernize the operations in the cooperative. This has enhanced close monitoring of the activities and transactions in the coop, faster decision making, reduced time for making payments to dairy farmers. Actually, all transactions and accounting issues end by the last day of every month which makes payment possible as soon as possible when the month ends. The system has inbuilt control mechanisms that minimizes fraud and time wasting in decision making.

Activities to build the capacity of participating farmers have generated considerable benefits for farmers in terms of improved productivity, lower cost of production, and improved margins. A summary of impacts are presented below.

Cow Productivity

During the period under review, the KDSC has contributed to the increase in cow productivity. Results show that the productivity has increased by 36.9% resulting into yields of 8.9 liters/cow/day during the wet season. This shows that the program has been able to achieve only 63.6% of the target by the end of Year 4 (14 litres/cow/day). Fifty percent of the milk sheds recorded productivity above the overall

mean. Kabete milk shed had the highest productivity of 12.9 litres/cow/day as compared to Kinangop (11.3), Nyeri (9.4) and Gatanga (9.0) Litres/cow/day as reported in Table 2.

Table 2: Productivity of milk in the year 2011 in Lts/cow/day

Respondent Category	Mean Yield 2010 wet season	Mean Yield 2010 dry season	Average yield in 2010 wet season	Average yield in 2011 Dry season	Average yield in 2011 Wet season	Mean Year 2011
Baseline – August, 2008	6.5	6.5	6.5	6.5	6.5	6.5
Whole sample	7.9	8.1	8.0	8.2	9.6	8.9
Sex						
Male	7.9	8.13	8.0	8.2	9.8	9.0
Female	7.4	7.89	7.6	8.3	9.4	8.9
Age of farmer						
Youth	7.1	8.22	7.7	6.1	8.6	7.4
Above 30 years of age	7.8	8.06	7.9	8.2	10.6	9.4
Milk shed						
Nyeri	8.0	7.01	7.5	7.2	11.5	9.4
Gatanga	7.18	8.05	7.6	7.5	10.5	9.0
Kabete	10.0	10.6	10.3	11.7	14.1	12.9
Lessos	8.3	11.16	9.7	10.7	6.8	8.8
Transnzoia	7.4	6.74	7.1	4.8	7.6	6.2
Kericho	6.8	5.54	6.2	6.1	6.3	6.2
Nakuru	7.0	7.91	7.5	7.1	7.9	7.5
Kinangop	8.1	8.08	8.1	10.8	11.8	11.3

Cost of Production

In order to increase the competitiveness of the dairy sector, the program emphasizes activities that can result in a reduction in cost of production. For example, the program promoted cost-cutting feeding regimes, including adoption of crop residue preservation, hay, silage, leguminous fodder technologies (Lucerne, desmodium, caliandra), and own feed formulation (use of molasses and microbes). These resulted in the reducing cost of production by 20.4% compared to the 20% reduction targeted by the program in Year 4. As reported in Table 3 below, the cost of milk production was reduced to Kshs. 11.3 in the fourth year. The increase in cost of production in Year 4 compared to Year 3 has been occasioned by an increase in the price of animal feeds that was significant in this period. This was coupled with increase in inflation especially involving the agricultural sector that resulted in increased prices of inputs. The adoption of the high crude protein and palatable Lucerne and Desmodium fodder species have significantly reduced farmers reliance on expensive cereal-based commercial concentrates such as dairy meal.

Table 3: Cost of production - 2011 and cumulative program figures in KShs/litre

Respondent Category	Cost of production-wet season	Cost of production)-dry season	Cost of production in 2010 wet season	Cost of production in 2011 dry season	Cost of production in 2011 wet season	Mean Year 2011
Baseline – August, 2008	Ksh. 14.20	14.20	14.20	14.20	14.20	14.2
Whole sample	9.90	11.10	10.5	10.3	12.2	11.3
Sex of household head						
Male	9.70	10.80	10.3	9.6	11.9	10.8
Female	10.80	12.40	11.6	10.8	13.6	12.2
Age of farmer						
Youth	6.50	8.80	7.7	7.6	9.4	8.5
Above 30 years of age	10.02	11.30	10.7	11.6	12.5	12.1
Milk shed						
Nyeri	15.80	14.96	15.4	15.1	17.8	16.5
Gatanga	12.40	12.00	12.2	12.3	13.4	12.9
Kabete	7.70	19.40	13.6	11.6	17.3	14.5
Lessos	7.40	7.6	7.5	7.4	9.0	8.2
Transnzoia	9.10	10.7	9.9	9.8	11.2	10.5
Kericho	11.40	5.50	8.5	8.7	9.0	8.9
Nakuru	9.60	9.20	9.4	9.2	11.9	10.6
Kinangop	6.50	10.6	8.6	7.9	10.5	9.2

Fodder Crop Usage

The usage of fodder crops has significantly improved during the period of project implementation. From all dairy farmers interviewed, about 98% of them had established and were using fodder crops for their dairy cows. During the period under review, the number of farmers with Desmodium increased to 10.7% in Year 4 as compared to 2.1% at baseline. Also as shown in Table 4 below, the use of maize stovers as fodder increased 32.9% during the fourth year of the project as compared 2.7% in the first year while lucerne grass increased from 3.7% to 5.3% during baseline and Year 4, respectively.

Table 4: Proportion of farmers establishing fodder crops/trees

Proportion (%) of farmers planting	Baseline (%)	2009 (%)	2010 (%)	2011 dry season (%)	2011 wet season (%)	Cumulative moving average
Napier	79.5	81.6	82.1	88.2	83.5	83.0
Desmodium	2.1	4.0	0.6	5.0	10.7	4.5
Rhodes grass	7.3	13.9	21.1	25.0	18.4	17.1
Lucerne	3.7	2.1	4.8	3.2	5.3	3.8
Fodder trees	2.1	1.3	1.9	6.5	4.9	3.3
Fodder sorghum	1.0	1.7	3.2	3.5	3.2	2.5
Caliandra trees	1.7	2.8	2.2	6.8	4.5	3.6
Oats	14.1	6.4	12.5	12.6		11.4
Fodder maize	Na	2.7	4.2	6.0	32.9	11.5

Technology Transfer

The uptake of technology has been demonstrated in the program area regarding the use of maize stovers as dairy feed. About 33% of the dairy farmers have adopted the use of maize as fodder crop with majority being recorded in the expansive North Rift area especially in Lessos and TransNzoia Milk sheds (Figure 9). This shows an improvement as compared to only 2.7% of farmers that reported using it in the first year of the project. The program has observed a considerable rise in uptake of maize as a fodder crop. Maize has strictly been regarded as human food in the country, especially in Rift valley. The crop, however, is highly nutritious and makes better ensiling material than Napier grass, which is commonly used.

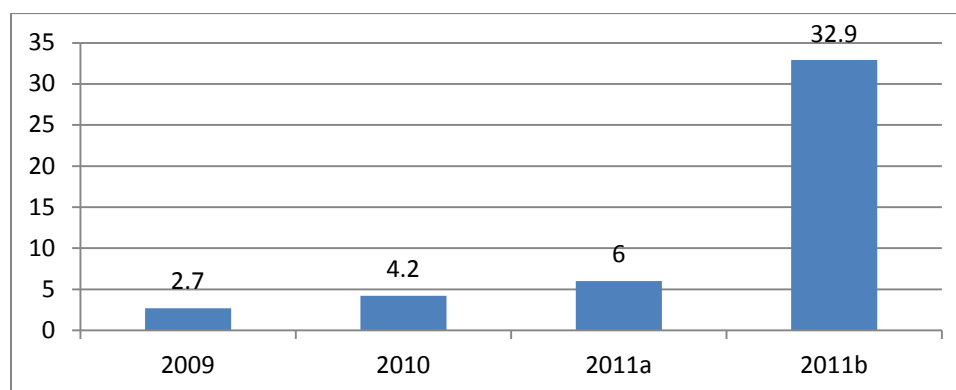


Figure 9: Trend of uptake of fodder maize

Gross Margin for Dairy Farmers

Table 5 shows that during the year, the gross margin reported by dairy farmers was KShs. 10.05 which shows an increase of over 100% as compared to the baseline values. This shows that the program has surpassed the target of 32% by the end of Year 4.

Table 5: Gross Margins and household income: 2011 and cumulative program figures in Kshs/Liter

Respondent Category	Gross Margin -wet season	Gross Margin-dry season	Gross Margin in 2010	Gross Margin in 2011 Dry season	Gross Margin in 2011 Wet season	Gross Margin in 2011
Baseline – August, 2008	5.80	5.80	5.80	5.8		5.80
Whole sample	7.50	8.8	8.2	8.4	11.7	10.05
Sex						
Male	7.70	9.1	8	8.7	12.4	10.55
Female	7.50	7.5	7.5	7.3	11.0	9.15
Age of farmer						
Youth	9.60	11.16	10.4	5.8	13.8	9.8
Above 30 years of age	7.40	8.64	8.0	8.3	9.6	8.95
Milk shed						
Nyeri	4.80	3.04	3.9	11.4	2.8	7.1
Gatanga	4.50	7.60	6.1	7.6	15.7	11.65
Kabete	10.60	3.31	7.0	13.1	19.5	16.3
Lessos	12.20	13.7	13.0	10.6	14.0	12.3
Transnzoia	9.70	8.3	9.0	8.4	15.2	11.8
Kericho	4.0	14.3	9.2	9.8	10.2	10
Nakuru	6.20	10.1	8.2	3.4	8.9	6.15
Kinangop	8.30	9.44	8.9	7.0	7.5	7.25

Household Income

KDSC realized an improved income earned by the primary producers in the project area. This was realized due to improved prices due to the federation of different SBOs, increased levels of productivity, and improved availability of inputs by the service providers. As reported in Table 6, the income realized from dairy was Kshs. 5,199.65 (\$59.8) per month. This cumulatively resulted in an increase of about 154% compared to baseline which has surpassed the target value of 60% by the end of Year 4 of the project implementation. The increase can be attributed to the increase in productivity and increase in average price as a result of project interventions.

Table 6: Household income: 2011 and cumulative program figures (Kshs/Month)

Respondent Category	Household income -wet season	Household income-dry season	Household income in 2010	Household income in 2011 dry season	Household income in 2011 wet season	Household income in 2011
Baseline – August, 2008	2043	2043	2043	2043		
Whole sample	4849.9	5338.7	5094.0	5032.6	5366.70	5199.65
Sex						
Male	5206.2	5536.5	5371.4	5240.4	5697.00	5468.70
Female	3703.3	4596.8	4147.1	4201.4	4886.10	4543.75
Age of farmer						
Youth	4535.6	5279.6	4907.6	1530.0	4351.20	2940.60
Above 30 years of age	4857.6	5342.8	5100.2	5021.0	5047.80	5034.40
Milk shed						
Nyeri	2369.7	1834.4	2102.1	5264.4	4004.40	4634.40
Gatanga	1708.7	3430.7	2569.7	1783.6	6291.00	4037.30
Kabete	8157.9	4231.4	6194.7	12313.4	12616.20	12464.80
Lessos	9024.7	10660.5	9842.7	4479.0	6494.40	5486.70
Transnzoia	6772.1	5569.9	6171.0	2718.8	4389.60	3554.20
Kericho	1426.8	5289.6	3358.2	3263.9	3720.00	3491.95
Nakuru	5326.9	6560.0	5943.5	2711.9	2767.50	2739.70
Kinangop	4220	5162.7	4691.5	5820.8	4915.50	5368.15

Artificial Insemination Adoption

Increased use of productivity-enhancing technologies, especially artificial insemination, has been realized among farmers working with the program. Program data shows a marked increase in the proportion of farmers using AI as reported by 87% as compared to the baseline proportion of 39.9% (see Table 7). The adoption of technology was lower in the Kericho and Lessos as compared to other milk sheds.

Table 7: Artificial Insemination technology adoption in 2011

Respondent Category	Technology adoption - AI (%)
Baseline	39.9
Whole sample	87.0
Sex of farmer	
Male	85.5
Female	90.5
Age of farmer	
Youth	89.0
Above 30 years of age	86.5
Milk shed	
Nyeri	94.1
Gatanga	91.1
Kabete	90.4
Lessos	52.2
Transnzoia	78.6
Kericho	43.9
Nakuru	68.3
Kinangop	95.4

Beth Maina, Farm Manager, Reaches Dairy Farmers through Demo Plot

Mrs. Beth Maina is married to a service provider who works for Kitiri DFCS and provides clinical and AI services to the co-op members. Beth is one of the members of Kitiri DFCS and has been outstanding in managing dairy animals as far as the husband is concerned. She operates a demo farm in the area alongside other four members in the cooperative to serve coop members. In their demo farm, there were several types of dairy feeds found locally which include oats, lucern, maize, vegetables and carrots. Alongside these, they also buy concentrates and supplements from the market to make sure that their dairy cows get the right quantities of all ingredients required. At the same time, in order to prepare feeds for their animals, she has a chaff cutter that cost her family KShs 60,000 (\$705) to install fully. In her farm, farmers normally attend trainings except that the major trainings were done in 2010 while this year, there has only been few farmers coming for consultation about different issues regarding dairy activities.



Figure 10: Beth Maina in her feed store on the right, while on the left is one of her dairy cows registered

During the training sessions, farmers are always taken through different topics concerning dairy animals. These include quality milk production; feed storage and management, calf rearing, breeding (judgment, registration and classification); fodder conservation; business management and animal health management. Some of the SPs used included animal health clinical officers, coopers, Norbrook and Osho chemicals.

The lady has realized an increase in milk productivity over the last two years and attributes this to her participation in trainings organized by KDSC. Her three dairy cows currently produce a total of 45 kg/day as compared to 20 kg/day before the project. Being members of Kitiri DFCS, they access ready market for their milk, steady milk prices, and inputs available on credit and AI services whenever the service is required. It was in her farm that we encountered all her dairy cows registered with KLBO and Kenya stud book. This according to her has increased the value of her animals and therefore would fetch higher prices as their origin could easily be traced. In fact, she offered that instead of disposing any heifer born within her flock, she would rather dispose the older animals whose parenthood could not easily be identified.

3.3 Component 3: Increase Availability of Dairy Business Development Services

The KDSC implementation method focuses on building capacity of BDS providers, i.e. switching from assisting micro enterprises directly to ensuring sustainable access to services through functioning markets. To achieve this objective, and for effectiveness, outreach, and impact, the program uses a portfolio approach in provision of BDS. This entails working with multiple partners as BDS providers rather than work with one or just a few and also the capacity building of the providers to provide a range of services (with some embedded), rather than just one for increased effectiveness.

In the reporting period, the program recruited and trained 263 new business service providers. This now takes the total number of service providers working with the program to 882. The program has already surpassed the target of 350 service providers providing additional services to farmers by end of Year 4 of program implementation. These experts work with and deliver productivity enhancing technologies to specific farmer groups. Additional services provided to the dairy farmers include: feeds and feeding, extension, cow registration, feed conservation especially silage making, among others. These are provided after attending program facilitated capacity building workshops and seminars.

Program interventions on enterprise development have focused on:

- Offering training on business and enterprise management, feed conservation, or refresher courses on specific areas of expertise. KSDC has also provided service providers with manuals and training modules, and exposed SPs to new business opportunities in dairy farming.
- Linking financial service providers to BDS providers who need capital to expand their businesses or increase efficiency of service. A number of artificial insemination providers have received

loans from Faulu Kenya, a micro finance agency, and bought motorcycles to expand their areas of coverage and to reduce time lapse between when they are called and when they serve farmers. As a result conception rates have improved for farmer's livestock.

- Facilitating interactions via platforms for communication and connection, between micro and small enterprises and non-traditional financial service providers such as fund managers, investments banks, and other development programmes to enable enterprises to access innovative financial services and products that can be tailored to meet the their needs.

Contracting Feed Manufacturers by SBOs

In an effort to ensure farmers receive quality livestock feeds and feeds supplements, KDSC contracted AHEAD Consultants (lead by Professors Gachuri and Mbugua both of the University of Nairobi) to facilitate signing of contracts between the SBOs and feed manufacturers. During the period under review, the consultants facilitated the signing of 10 contracts with feed manufacturers that will ensure that feed supplied to the SBOs are of high quality standards. These feed manufacturers are Limuru Posho Mill Ltd., Light Ventures Industries, Lima Feeds Ltd., Phamerline Products Ltd., Nzuri Feeds Supplies Ltd, Top Care Feeds, Pioneer Feeds Ltd., and Economy Farm Products. With successful contracting of feed manufacturers, in the next reporting period the program will be able to outline the number of farmers that utilize the quality feeds and which in effect will result in getting the value of quality feeds purchased by the primary producers in the program area.

Formation of North Rift AI Providers Project (NRAIPP)

KDSC champions the uptake of AI technology in all the milk shed as part of a campaign to improve the genetics of existing dairy animals that will ultimately result into improved milk productivity. The expansion of AI services has been facilitated by the SPs with positive results. Each quarter during the year, an increased number of farmers acquired AI technology in the milk shed. Because of the market interest, AI technicians joined together and formed North Rift AI Provider's Project which was officially launched in March. The launch was attended by animal health technicians, AI technician's farmers and other guests who were received training on genomics and operating a successful AI business. These service providers work with farmer groups and deliver productivity enhancing technologies. Because the supply relationship is established, additional services or information can be added and offered to the dairy farmers including, feed, extension information, cow registration, and feed conservation practices such as silage making. These are attributes are provided after attending capacity building workshops and seminars facilitated by the program.



Figure 11: Dr Odhiambo addresses technicians during the launch of NORAIIPP

Financial Services to SPs and SBOs

During the year, KDSC introduced a total of 14,186 dairy farmers to credit facilities, resulting in a cumulative total of 42,814 farmers, 37% of whom are women, already linked to credit facilities compared to a Year 4 cumulative target of 36,000. As of the end of Year 4, the program has surpassed the target by about 19%. The program has also made strides to inform dairy farmers about the availability of such services and build their understanding about financial products. In Kinangop milk shed, the program invited the director of K-LIFT, Dr Kinyi, to present to Tulaga FCS on the criteria for making loans accessible to dairy farmers in cooperatives by using a system where loan repayment is through check-off system. Five members of Tulaga bought forms to apply for funding. K-LIFT also promised to train service providers on how to assist applicants in completing a loan request proposal. These services are expected to provide more financial assistance to co-op members at an affordable rate and enabling them expand their dairy activities. As shown in Table 8, during the period under review, a total of US\$448,652 (KShs. 39.03 million) was accessed by dairy farmers in the program area from financial service providers that was enabled through linkages with financial institutions.

Table 8: Summary of beneficiaries accessing loans during year 4

Milk shed	SBO	Amount (KShs)	Source of Funds	Beneficiaries	
				Male	Female
Kinangop	Kitiri FC Society	1,500,000	ILO	17	35
	Wanjohi FC Society	1,000,000	CO-OP Bank	212	98
	Miharati F C Society	4,000,000	CDTF/SBO	331	131
TransNzoia	MEEBOOT	2,059,700	Equity/Kilioma biashara/family	86	30
	Tongaren	1,666,990	SACCO	110	87
	Tarakwa	496,000	SACCO	17	6
	Cherengany	1,660,000	Coop/Equity/Maziwa loan (NKCC)	1922	856
	Koitogos	40,000		10	11
Lessos	AINABKOI	560,000	SACCO	67	45
	KIPCHAMOO	1,200,000	EQUITY	92	132
	KAMNO	300,000	COOPERATIVE	31	20
	SINGALO	200,000	EQUITY,COOP	22	12
	LELWAK	200,000	EQUITY	15	10
	BIDII	600,000	EQUITY	32	16
	MOIBEN	150,000	EQUITY,KCB	12	5
	KARONA	300,000	EQUITY,COOP	40	22
	TUIYO	200,000	FAMILY	20	12
	TIMBORUA	800,000	EQUITY	67	45
	SUGOI	400,000	KCB,NATIONAL	15	10
	MEGUN	300,000	FAMILY	45	0
Nyeri		21,400,000		2630	1653
Total		KShs. 39,032,690		8977	5209
USD		USD448,652			

Service Provider Display their Technologies at Kenya Livestock Breeders Show

The Livestock Breeders Show was attended by more than 10,000 farmers according to the organizers. Over 2,000 dairy farmers visited the KDSC stand during the breeders show. Analyses of respondents to a feedback survey of attendees indicate that about 70% of those who attended the show were male whereas the rest were female. This compares similarly to other findings relating to women participation in dairy where women participation is generally 25 percent in membership, trainings, and meetings as well as in leadership and decision making structures.

KDSC hosted a demonstration and information stand to showcase various Business Service Providers offering services and products to the livestock industry. The SPs who displayed their products and businesses included, Nakuru Simba Machineries, Sharva Stores Limited, United Business Solutions, Ebrahim Electronics, ASL Heavy Fabrication Division, Kengap Publishers and Rhino Park Dairy Resource

Centre Karen. SPs presented small machines for forage chopping and grinding which are sold at prices affordable to small-scale farmers. SPs also demonstrated practices that use high-quality molasses for feed mixing and silage making and offered training farmers on aspects of silage making, using above-ground silage bag technology. United Business Solutions and Ebrahim electronics displayed digital milk weighing machines, including both 50kg and 30 kg scales. The demand for digital scales was high and the suppliers sold out of the units available during the show. ASL Heavy Fabrication Division, which fabricates various milk processing machines, displayed its 1,000 liter milk chilling tank and its 50 liter aluminum milk can products. The company sales and technical personnel were available to explain various aspects of milk chilling at either a cooperative or farmer level. Rhino Park Dairy Resource Centre Karen demonstrated adding value to milk at the farm-level, displaying various flavors of yogurt products. Nakuru Simba Machineries specializes in selling small machines for forage chopping and grinding. Their equipment has relatively low purchase price and low operating cost, which made the machines attractive and affordable to small scale farmers. The manufacturer periodically demonstrated the machines in action and in the process showed the chopping of dry fodder and silage as shown in the Figure 12 below.



Figure 12: Service Providers showing dairy farmers how to operate a chaff cutter

Kenya Livestock Breeders Organization (KLBO) Grading

KLBO organizes and operates the breeders show and the organization felt that it was important to survey participants to get the opinions of farmers about services offered by KLBO. Overall 8 percent of respondents rated the services and offerings of KLBO as very good, 21 percent as good, 19 percent as fair, 16 percent as poor, while 35 percent felt the services were non-existent in their areas. The responses varied from milk shed to milk shed. The organization was highly rated by Kericho at 20% followed by Kabete with 17%. Gatanga milk shed stood out as the milk shed with the highest respondents (64 percent) indicating that the KLBO services were non-existent. The same respondents were also asked to state the factors which prevent them from accessing KLBO services, such as livestock registration offered by the Kenya Stud Book and milk recording services offered by the Dairy Recording services of Kenya. In their response farmers indicated that cost was not a factor in their

inability to access the services rather the other factors ranging from lack of awareness to poor delivery of services prevents them from accessing the services.



Figure 13: Dairy farmers in the KDSC stand during the Breeders show

The farmer feedback questionnaires offer important lessons that need to be addressed by parties concerned and covered across many fields. The area of animal registration and recording stand out as an areas warranting strong intervention, as did the area of AI. Information about animal nutrition came out as an area farmers benefited from during the show and more information targeting this area should be availed to the farmers by extension agents. The challenge with disseminating of such information to farmers is the ability of farmers to implement. The milk shed coordinators and facilitators should work hand-in- hand to help farmers with the implementation of ideas gathered during the show. The feedback report should also be availed to the show organizers to help them improve the future shows. On the whole the show enabled many farmers to showcase some of the best of the Kenyan livestock and the latest dairy information in a commendable way and lived up to the standards it has been reputed for.



Figure 14: Dairy farmer showing his dairy cows during the show

During the period under review, several SPs in Gatanga milk shed attended farmers' Education day and made presentations on the services they were offering to the farmers. 198 farmers turned up and were addressed by the following SPs: Cooperative Bank, Murata SACCO, Cooperative Insurance Company, Nakuru Simba Machineries, Mr Francis Kamande a contracted biogas SP from KENFAP, and Bajowa Feed Manufactures from Kahuro. In Kangema the program established a working relationship with Welfare Pharmacy, a large drug store in Kangema that sells both human and animal medications. Another contact has been established in Maragwa with Dr. Irungu Mwangi a veterinary surgeon who operates an Agro-Vet shop in the same place. These are fully registered business entities serving many farmers in the area and therefore reliable SPs to work with the program.

3.4 Environmental Degradation Mitigation Measures

Activities to mitigate farm management practices—farm, service providers and at bulking centre level—that may result in environmental degradation were emphasized in the year. The KDSC program encouraged program beneficiaries to work towards sustainable management practices that reduce soil erosion, soil and water pollution, and emissions to safeguard the sectors' future contribution to national economic growth. This is in recognition of the fact that agriculture is and will be (in the short to medium term) the mainstay of Kenya's economy.

With respect to mitigating environmental degradation, during farmer trainings on disease control, emphasis were put on proper pesticide (cans) waste disposal through incineration or dumping in pit latrines to protect the environment. Drug withdrawal periods have been emphasized to be observed especially for mastitis cases. The project also trained dip attendants and included the safe disposal of

acaricide wastes and waste containers as a key part of the training curriculum. In other areas, biogas and fodder tree and shrubs establishment to check on soil and water management were emphasized.

KDSC encourages farmers to prepare multipurpose trees and shrubs to be transplanted during the dry season. A tree nursery in Kipsaina has been identified to supply the seedlings and seeds to farms during the planting season.

Kenya National Federation of Agricultural Producers (KENFAP) and KDSC continue to promote biogas technology within targeted milk sheds. Farmers have shown and appreciated the importance of biogas and many farmers are adopting the technology, including direct beneficiaries of the project. All biogas technology is being constructed using a cost-sharing basis between the client and the KENFAP biogas project. A total of 616 biogas digesters were installed in this period. Farmers whose biogas plants are complete and operational reported that they were satisfied with the work and the output.

During the period under review, a biogas seminar was held in Gatanga milk shed with an objective of promoting the use of biogas as an alternative source of energy for household and commercial purposes. The program also went on to promote the KENFAP biogas program (KENDBIP) which is giving farmers subsidies. This was done during LFFS sessions. Use of bio-fuel stoves is also being promoted.



Figure 16: Farmers during the launching of a biogas plant at Mr.Gichukis Farm (Gatangamilk shed)

3.5 Gender and Youth intervention

Program efforts to promote gender and youth involvement in the dairy sector have registered positive results. Members of Rugika Youth are dealing in fodder growing mostly napier. The group leaders expressed interest on fodder conservation and selling of hay to farmers and attended the Kikuyu field day where silage making was being trained. The main challenge of the youth is their availability as they are sparsely distributed in their activities and the project has to work creatively to reachout to youth.

In TransNzoia milk shed, the program has successfully launched the youth football team at Taito JamiiTimaa and now has launched another youth group at Taito as an intervention to bring youth together. The JamiiTimaa football team has now been registered with the ministry of social services. During the team meetings, dairy matters are discussed to induce the members into dairying as a business.

Gender is a factor the program continues to emphasize, especially when it comes to decision-making process. In Kitiri for example during the special delegates meeting attended by 71 members, 14 percent of the representatives were female. This is considered a milestone since meetings in this farmer cooperative has been a preserve for male members only.

The program mobilizes women groups in the milk shed and facilitates them to fully participate in dairy activities. The Kitale women initiative is an appreciated part of the program in which they coordinate groups of women who are already participating in dairy farming and who are willing to join the already existing SBOs within the milk shed. Pursuant to gender roles, all the project meetings and the FFS that were being conducted in the quarter have been tailored to match with appropriate times as agreed upon by the members both men and women. Women in particular prefer morning or afternoon, not early morning or late evening times when they have other commitments. This scheduling idea has been strictly adhered to for planning the FFS and SBOs meetings. In Lessos milk shed, the program has observed that fewer women are being trained at the FFS, and it is attributed to the fact that owner and manager of the dairy cows are the male in the family. The program has had to mobilize women to attend such meetings although counter to cultural norm where men attend these type of meetings. As a result of the special campaign, there has been some progress in Lessos and more women are coming to LFFS.

KDSC Captures the Attention of Timothy Timor

Mr. Timothy Timor, a committee member of Surungai Dairy group, is a former truck driver who has fully ventured into dairy farming. At the age of 33, Timothy is married with two children. Before



Timothy Timor standing in his farm compound

venturing into dairy farming, Timothy was a driver of transit vehicles for several years an experience that took him to all the East African countries namely: Uganda and Tanzania and also to Sudan, Rwanda and the Democratic Republic of Congo. Come 2002, he bought a farm and three animals and left to be managed by his workers who did not have much experience in animal management. “For several years, none of the animals served with AI straws, conceived and this frustrated us very much forcing us to eventually return to natural mating using bulls, which greatly affected the quality of the animals”, he explains.

“I eventually left the driving job in 2008 and decided take over the management of the farm to

ensure we generate enough income to help me and sustain my family. After I took over the

management of the farm, we were lucky because the following year the KDSC program came to TransNzoia and our group of Surungai Dairy was among the first to sign a contract to work with it. Since joining the program in 2009, I have greatly benefited from the trainings, workshop, and seminars that the program organized and facilitated. As a result, over the last two years I have made enough silage for my animals and have established a forage pasture planted with 2 acres of BomaRodes and 2 acres with Napier. The program also identified my farm as a demonstration farm that can be used by the program to train other farmers,” Timothy explains..

When asked about his vision, Timothy responded emphatically that it is dairy business and nothing else. “I now have 25 animals and of the few we are milking, with the intervention of the program, we have seen the volume of milk increase from 20 litres to 40 litres per day. “I want to thank the KDSC program for the impact they have made in our lives and would like to encourage all dairy farmers to appreciate training and give personal attention to their animals. If they do, they will definitely see results”. He stresses identifying impacts of interventions that have been promoted by the program.

3.6 Challenges

During the period under review, there were several challenges that were encountered by the beneficiaries of KDSC program.

Livestock Disease

The main challenge reported was the disease outbreak. The program area registered an outbreak of foot-and-mouth disease in three program milk sheds, namely Trans Nzoia, Nakuru and Kabete. The program worked closely with Ministry of Livestock Development personnel and suppliers of animal health products on this issue. However, due to the gravity of the disease outbreak, a number of planned events were suspended, especially livestock farmer field days. Because of the impact of the disease in these milk sheds, the program introduced a strategy of linking dairy cooperatives under the milk shed to agro-vets to facilitate the vaccination of their animals against foot- and-mouth disease. The program also recruited and trained nine dip attendants from four dips in Nakuru milk shed. The trainings conducted covered dip structure, types of acaricides, ticks, dip management by-laws, committee elections, documentation, drug resistance and back-up services of ultravetis. During the same period, a total of 64 dips were utilized in Lessos milk shed and a total of 25,074 animals on average were dipped every month.

Volatile Milk Market

Another challenge faced by the dairy sector during the period has been the inability of the milk processors to absorb the volume of milk produced by farmers, leading to non-collection of milk in some cases, low milk prices and delayed farmer payments. Kitiri and Tulaga FCS in Kinangop milk shed experienced high levels of milk rejection from the Brooke Side collection point and at Engineer collection centre. Apart from tactics to delay receiving milk in good time, the collectors seemed to keep altering the standards. Kitiri and other SBOs have started consulting on how they can alleviate this problem and they feel they need to come up with a farmers processing plant to address the problem.

The sudden lowering of prices by NKCC, a major raw milk buyer has affected the performance of SBO'S as some members opted to sell their milk to milk traders who were offering better prices. Milk volumes handled at SBOs were accordingly lower. However, the price reduction only affected those without supply contracts and thus has helped in reinforcing the importance of having supply contracts.

The lack of steady market for the milk and over reliance on the processors is still a big challenge for small producers. NKCC reduced the prices of milk from Kshs. 25 (\$0.3125) to Kshs. 23(\$0.2875) per litre. NKCC also temporarily halted the signing of new milk supplier contracts, obstructing the progress of the TMSG from forging ahead with the bulking process. KDSC liaised with the outgoing NKCC Kitale Plant Manager and successfully re-opened the negotiations with the head office.

Market Distortion

Some development programs operating in the program areas by other implementers continue to perpetuate dependency attitudes by paying farmers directly, funding purchases for beneficiaries, or by giving away inputs and dairy equipment. Some stakeholders, accordingly, still expect payments from KDSC to even attend capacity building sessions and some service providers demand payment to train farmers. The program has put in place measures to address this challenge through capacity building of the dairy farmers. KDSC uses an approach in which farmers who are members of the dairy societies make contributions in order to acquire cooling plants from their milk proceeds. At the same time, the program has established a mechanism in which dairy farmers are linked directly to service providers. The SPs offer services and inputs to these farmers and payments are often made through a check-off system on behalf of the farmers by the processors. This has enabled members to understand that whenever they want to access any service, it is they who bear the cost.

Milk Collection Infrastructure

The program advises farmers on the need to have their own cooling units in their SBOs. However, because of financial requirements, there has been a slow uptake of this aspect in the project area. Members of some of the SBOs have been able to contribute toward cooling equipment and the SBOs have managed to purchase cooling units. However, a majority of the cooperatives still have not been successful in accessing this infrastructure. To address this challenge, the program is involving other development partners including the government and banks to provide financial assistance. A constituency development fund has been utilized in some of the areas while at the same time, the program has linked SBOs with financial institutions in order to acquire loans. The program has also contributed by providing technical assistance to the cooperatives towards the development of viable and bankable business plans that can expedite the loan processing.

Methodology

The approach of BDS which involves service providers as the main trainers has resulted into slow dissemination of information to dairy farmers in some of the areas. Some service providers have taken a longer time than expected to embrace farmer training as an embedded service because training does not provide direct economic returns on investment by the SPs. As noted above, some SPs have been

seeking for payment before delivering any training. The program has continued to build the capacity of SPs on the benefits of including training as a component of the services they deliver to dairy farmers.

3.7 Lessons Learned

The organization of farmer groups into business organizations has enabled dairy producers to increase their bargaining power with the processors. The formation of federations has resulted in increased milk prices at the farmer level and the same time qualifying of members for bonuses given by processors. Increased capacity building of service providers has resulted in increased sales of their products. Through the linkages facilitated by KDSC program between service providers and farmer cooperatives have enabled farmers to invest in technologies like digital weighing scales, computerization and biogas equipment at affordable rate. This has led to realization of the objectives of the program in enhancing development of small business organizations.

Sudden lowering of prices by NKCC, a major raw milk buyer has affected the performance of SBO'S by members opting to sell their milk to milk traders who offer better prices hence affecting the volumes. However, since the price reduction only affected those without supply contracts, it has reinforced the importance of having Supply Contracts with processors which can only be facilitated through cooperatives.

The organization of farmer groups into business organizations has enabled dairy producers to increase their bargaining power with the processors. The formation of federations has resulted in increased milk prices at the farmer level and the same time qualifying of members for bonuses given by processors.

Increased capacity building of service providers has resulted in increased sales of their products. Through the linkages facilitated by KDSC program between service providers and farmer cooperatives have enabled farmers to invest in technologies like digital weighing scales, computerization and biogas equipment at affordable rate. This has led to realization of the objectives of the program in enhancing development of small business organizations.

Collaboration with other agencies has yielded positive results for the program. There has been continuous use of engagement of other stakeholders in the industry which has culminated into reaching out to many dairy farmers with range of benefits. Some of the stakeholders include FHI, KDB, DTA and ministry of livestock development.

3.8 Work plan for Year 4 – Quarter I

Table 9: Work plan for Year 4 – Quarter I

No.	Quarter Month	Year 4 Q I			Anticipated Outcomes
		10	11	12	
1.0	Component One – Enhance capacity for milk production input quality certification and market promotion				
	Activity 1.1 Strengthen the Kenya Dairy Sector Competitiveness Task Force and Donor Working Group on Competitiveness				
1.1.1	Hold Implementers Working Group Meeting		x		Synergy and leveraging funds
1.1.2	Hold Task Force Meetings	x		x	Minutes, action plan initiatives implemented
1.1.3	Provide support to the Dairy Task force on subcommittees and regional working group coordination. Capacity building on consensus building	x		x	Minutes and action plans implemented
	Activity 1.2 Identify and Mobilize Resources to Implement Action Plans				
1.2.1	Prioritize Action Plan initiatives	x			Posted on the KDSC/KDB websites
1.2.2	Meet with stakeholders and donors to mobilize funding for high priority initiatives e.g. (dairy animal census)		x		\$ 20 million Leveraged
1.2.3	Implement Action Plan solutions	x	x	x	All prioritized action plans implemented
	Activity 1.3 Develop Quality Standards and Support Policy Reform Initiatives				
1.3.1	Sensitize Dairy stakeholders on the reviewed key Policy Reform initiatives as part of the accomplishment of the Action Plan	x		x	4 stakeholders workshops Held at National or Regional level
1.3.4	KDSC team will facilitate the Task force to Promote differential payment for quality	x	x	x	Quality certification framework developed, promoted and implemented
1.3.5	KDSC team will continue to work closely with Laboratories/AKFEMA to build capacity of members (LTA 20 days)	x	x	x	30% increase in quantity feed marketed under new feed quality standards
1.3.6	Publicize policy briefs semi annually	x			Policy briefs developed and uploaded on the website
1.3.9	Continue to promote the Data Base of service providers with raw milk testing instrumentation for MCCs and develop a sustainable way of acquisition			x	Populate the Farmer and livestock Portal and promote the portal
1.3.10	Capacity building of Laboratories		x		Sensitization of Laboratories on the benefits of International accreditation and capacity building towards accreditation with 17025 certification
	Activity 1.4 Promote Market Expansion of Milk and Value-Added Dairy Products				
1.4.1	KDSC team will support industry-led quality promotions via Action Plan		x	x	Generic consumption campaigns
1.4.2	KDSC team will pursue the dissemination and implementation of the Master plan (TA 20 days)			x	Activities stream lining the Dairy sector
1.4.3	Support School Milk Program initiatives		x		Over 500 schools / 10 processors participating
	Activity 1.5 Facilitate Institutional and Association Capacity Building				
1.5.1	Use competitive grants directed at local firms to provide technical assistance to dairy related institutions and associations	x	x	x	Improved performance of at least 20 Dairy related supported

					institutions
2.0	2.0 Component Two - Develop Dairy Smallholder Business Organizations (SBOs)				
	Activity 2.1 Identify Smallholder Business Organizations (SBOs) for KDSC Interventions				
2.1.2	Cooling plants installed or rehabilitated		x	x	15 additional Cooling units installed and or rehabilitated
2.1.3	Catalogue Milk Shed information on the KDSC Website		x		Increased efficiency and production of milk
	Activity 2.2 Technical Assistance and Capacity building to SBOs				
2.2.1	Strengthen businesses and management skills of SBOs	x	x	x	All SBOs strengthened. Increased SBOs operational efficiency
2.2.2	Strengthen linkages between SBOs, processors and SPs	x	x	x	40% increase in production and returns on high quality milk
	Activity 2.3 Promote Solutions and Create SBO Business Plans and Milk shed Action Plans				
2.3.1	Facilitate Business Plans for targeted SBOs	x	x	x	50 additional SBOs transformed into substantial business entities above the break-even point
2.3.2	Present Final SBO Assessment to Milk shed Action Planning Workshops and form Milk shed Task Forces			x	At least 20 milk shed working group meetings held and Minutes received
	Activity 2.4 Promote Embedded Services within Dairy SBOs and Processors				
2.4.1	Capacity building of the revived Kenya Dairy processors Association	x	x	x	Functioning KDPA continuing with semi annual meetings and supporting Members
2.4.2	Assist selected milk sheds to pilot new services	x	x	x	20% increase in gross revenue of milk bulking centers businesses from sale of input and services other than milk cooling
2.4.3	Assist processors to deliver embedded services for SBOs		x	x	At least 5 additional and 10 existing Processors offering Embedded services
2.4.4	Develop SBO operational and service provision best practices and post on KDSC website			x	SBO operational and SP best practices documented and shared
	Activity 2.5 Encourage Quality-Based Systems and Contracts				
2.5.5	Link processors and SBOs to quality certification and assurance providers as well as financial service providers			x	30 additional MBCs with HACCP and or National certification
	Activity 2.6 Coordinate and Leverage Resources for SBO Development Initiatives	x	x	x	\$ 20 million Leveraged
3.0	3.0 Component Three - Increase Availability of Dairy Business Development Services				
	Activity 3.1 Identify Enterprise level BDS constraints and opportunities				
3.1.1	Needs assessment for new BDSP	x			100 additional BDSP supported and Linked to Beneficiaries
3.1.2	Capacity building of existing and new BSPs		x		200 BSPs will continue to be supported
	Activity 3.2. Needs analysis for Dairy Industry BSPs				
3.2.1	Conduct an OCA for Processors			x	5 additional processors
3.2.2	Capacity Building of processors			x	Capacity building of 5 additional processors
	Activity 3.3 Promote Accreditation of and Standards for Dairy Service Providers				
3.3.1	Identify and promote best accreditation practices and service standards		x	x	10% increase in Value of services/inputs provided by BSPs
	Activity 3.4 Create Directory of Business Services Providers for Dairy Industry				

3.4.1	Continue to Solicit BSP corporate capability statements	x	x	x	Directory of the Livestock and famers uploaded in the e-portal with enterprises providing business services and producers
3.4.2	Continue to Confirm legal registration of BSP created and added to the directory	x	x	x	A growing Data base shared with stakeholders
3.4.3	KDSC team will populate BSP directory database and make directory public via project and Dairy Market Information websites	x	x	x	100,000 small holders purchasing private sector services at full commercial rates
	Activity 3.5 Forge Business-to-Business Linkages				
3.5.1	Conduct Business Solutions events in targeted milk sheds such as Gender and youth sensitization awareness campaigns	x	x	x	216000 small holder farmers engaged in new, diversified dairy related enterprises as a result of KDSC interventions
	Activity 3.7 Build Capacity of BDS Facilitators				
3.7.1	Develop and disseminate BDS delivery of specialized services to SBOs, SPs and institutions			x	5 Specialized services delivered to SBOs/BDSP or institutions
3.7.2	Capacity Building of Facilitators	x		x	4 Facilitators supported with skills on Technical development related to program activities
3.7.3	Facilitate complex BDS services through Competitive Sub-awards		x		100,000 Dairy Farmers receiving short term training (30% being women)
	Activity 3.8 Stimulate Value Chain Financing				
3.8.1	Support MFIs/SACCOs to develop innovative financial services/ products			x	20,000 additional farmers receiving loans from Financial service providers (30% being women)
3.8.2	Facilitate development of innovative financial services through Competitive Sub-awards			x	5 Financial products developed
	Activity 3.9 Build Capacity of New and Existing Business Services Providers				
3.9.1	Train BSPs and smallholders /SBOs			x	11 new technologies or management practices made available for transfer to additional SBOs/SPSs

4.0 Performance Data Table

Impacts					
Performance Indicator	Baseline	Year 4		Cumulative/ progressive Actual	Comments
	Value (2008)	Cumulative Annual Target	Actual (FY 2010/11)		
Household level impacts					
Increase in smallholder household income (%)	2043	60%	154%	150%	Current estimates indicate that farmer incomes from the sale of milk increased to Kshs. 5,199.65 per month on average in the year. Program cumulative average realized so far is 150%, surpassing the program target of 60% in Year 4.
Number of rural households benefiting (Number)	0	250,000	42,977	248,275	A considerable number of farmers still sell to hawkers due ready market. However, there has been an increase in coop membership due to improved prices through federation activities in Lessos and TransNzoia milk sheds. Of all active members of the SBOs, women account for 44.6%.
Sub-Sector Level Impacts					
Total volume of milk purchased from smallholder dairy farmers (MT)	316,980.3	360,980.3	468,155.5	468,155.5	A considerable increase in volumes sold by farmers was observed in the year. This increase can be attributed to increases in yield resulting from farmers adopting program-promoted productivity enhancing technologies with the onset of rains. The value also increased due to improvement of milk prices through federation activities
Total value of milk purchased from smallholder dairy farmers (US Dollar)	83.8M	95.4M	123.8M	123.8M	
Total volume of exports to regional and international markets (MT)	17,500	22,300	36.6 Million MT	36.6 Million MT	This data is reported one year later. There has been an increase in export due to increased production of high quality milk through adoption of standards.
Total value of exports to regional and international markets (US Dollar)	14.32 M	11.17M	15.3M	15.3M	
% change in volume of milk conforming to quality standards increased (%)	96.25%	80%	95.5%	95%	There has been tremendous reduction in quantity of milk rejected with majority of milk sheds having zero volume reported as rejects. This has been occasioned by promotion of the production of high quality milk under the project.
Total value of milk conforming to quality standards increased (US Dollar)	96.25%	80%	95%	95%	

Impacts					
Performance Indicator	Baseline Value (2008)	Year 4		Cumulative/ progressive Actual	Comments
		Cumulative Annual Target	Actual (FY 2010/11)		
% change in volume of milk and dairy products sold by processors	398,637 MT	13%	30% (518,228 MT)	30%	Volume of milk sold through the value chain has been rising continuously over the four years of program operation.
% change in value of milk/ dairy products sold by processors (Percent)	106.3M US\$	10%	28% (US\$136M)	28%	
Number of jobs created in the value chain (Number)	0	30,000	3,263	14,627	There are jobs resulting from investment in embedded service provision by SBOs & new business development providers in the entire dairy value chain
Firm level impacts					
Number of producers accessing/ receiving/ utilizing BDS services, inputs, technologies, and management practices	0	180,000	43,722	198,988	Program has linked all farmer groups with service providers in the 8 milk sheds. The provision of embedded services has resulted in increased number of active membership in the SBOs.
Farmers using improved technology increased (Number)	39.9%	150,000	41,441	141,422	KDSC use farmers using AI to inform this indicator. All farmers however use some form of program promoted technologies – all have reported conserving feeds; 98% have established fodder and 70.1% use AI among other technologies.
Increase in productivity of milk per cow/day (Lt)	Kshs. 6.4	14	8.9	8.4	A significant proportion of farmers working with the program registered gains in yields way above the sample average,
Increase in gross margin per Lt of milk (Percent)	Kshs. 5.8	32	73.3	48.9	There has been an impressive growth in profit margins in Kericho milk shed due to low costs involved in purchasing of feeds. The program has also contributed in increasing the productivity and better milk prices.
Reduction in cost of production - farm gate (%)	Kshs. 14.2	12	20.4	23.4	The onset of rains has greatly helped reduce cost of production due to abundant forage. Average production cost has reduced cumulatively to Kshs. 11.3 per liter.
Component I - Enhance Capacity for Milk and Production Input Quality Certification and Market Promotion					
Number of industry policies improved/enacted	0	2	0	21	Program has been recognized by the MOLD in its facilitation that

Impacts					
Performance Indicator	Baseline Value (2008)	Year 4		Cumulative/ progressive Actual	Comments
		Cumulative Annual Target	Actual (FY 2010/11)		
Number of quality certification frameworks (milk product, animal feeds) developed, implemented/enforced	0	2	0	1	<p>led to the development of the Dairy Master Plan.</p> <p>Dairy draft regulations developed by the project is undergoing review by legal professional so as to make it acceptable by the government.</p> <p>Kenya livestock policy has been published for consideration by the government</p>
Total Value of non-project resources leveraged (US\$)	\$0	\$20M	0.26M	25.52M	These funds have been provided by farmers own contribution, government through constituency development fund (CDF) and other MFIs that give loans to beneficiaries
Increased revenue collected by KDB (%)	US\$ 1.066M	30%	50%	37.5%	Volume of milk sold through the value chain has been rising continuously over the years of program operation. An increase due to cess and levies charged on processors
Component 2 - Dairy Smallholder Business Organization (SBO) Development					
Number of producer organizations strengthened	0	100	10	124	During year 4, ten new SBOs joined the program due to improved milk prices and embedded services promoted by the program
Number of SBOs/MBCs with HACCP and/or national certification	0	40	69	69	SBOs that have business plans implemented together with those whose management attended training on quality issues have acquired national certification. Processors have also achieved this certification in their milk chilling plants.
Increased gross revenue of SBO/MBCs from sale of inputs and services other than milk cooling	82,500	30%	137%	137%	Some SBOs have embarked on production of high quality feeds for their members as well as provision of embedded services
Number of SBO/MBCs transformed into sustainable business entities	0	100	10	124	All SBOs working with the program operate profitably, according to the official audit reports and the profit and loss accounts that are done on a monthly basis.

Impacts					
Performance Indicator	Baseline Value (2008)	Year 4		Cumulative/ progressive Actual	Comments
		Cumulative Annual Target	Actual (FY 2010/11)		
Number of cooling units installed/rehabilitated in SBO/MBCs (Number)	0	25	6	20	6 coolers were rehabilitated in the year.
Component 3 - Availability of Dairy Business Development Services					
Number of firms providing new business services to producers (Number)	0	350	263	882	Program activities have focused on embedded service provision to increase the sales volume and revenues for the providers. All SPs working with the program now provide farmer extension services as an embedded service.
Number of smallholders (gender of HH head, age) purchasing private sector services at full commercial rates (number)	0	100,000	45,665	146,299	Increased use of productivity-enhancing technologies, especially artificial insemination, has been realized among farmers working with the program. Program data shows a marked increase in the proportion of farmers using AI (at 70.1%) compared to the baseline proportion (39.9%).
New technologies/management practices made available for transfer (Number)	0	25	0	24	New technologies still under research in collaboration with KARI
Dairy farmers receiving loans from financial service providers	0	36,000	14,186	42,814	Private AI service providers and SBOs working with the program have benefitted from program linkages with financial service providers. About 37% of those receiving loans were women.
Number of producers receiving short-term training	0	126,000	39,232	90,434	Farmers especially in TransNzoia demand trainings hence have shown some improvements for the program. Other areas still carry out a lot of mobilization in order to reach more members wit trainings.

5.0 Budget Execution

USAID Kenya Dairy Sector Competitiveness Program
Contract No. 623-C-00-08-00020-00
Annual Financial Report September 2011

	Budget	Actual Expenditures thru September 2011	Planned Expenditures (Oct-11-Apr-12) FY 12	Remaining Forecast as of September 2011
CLIN One (Year 1)*				
Total Estimated Costs	\$ 1,902,995	\$ 1,902,995	\$ -	\$ -
Fixed Fee	\$ 20,324	\$ 20,324	\$ -	\$ -
Total Estimate Cost Plus Fixed fee	\$ 1,923,319	\$ 1,923,319		\$ -
CLIN Two (Year 2)**				
Total Estimated Costs	\$ 2,183,292	\$ 2,183,292		\$ -
Fixed Fee	\$ 20,607	\$ 20,607		\$ -
Total Estimate Cost Plus Fixed fee	\$ 2,203,899	\$ 2,203,899	\$ -	\$ -
CLIN Three (Year 3)***				
Total Estimated Costs	\$ 2,229,663	\$ 2,229,251	\$ -	\$ 413
Fixed Fee	\$ 24,372	\$ 24,368	\$ -	\$ 4
Total Estimate Cost Plus Fixed fee	\$ 2,254,035	\$ 2,253,618		\$ 417
CLIN Four (Year 4)****				
Total Estimated Costs	\$ 1,555,543	\$ 444,096	\$ 1,111,424	\$ 1,111,424
Fixed Fee	\$ 16,261	\$ 4,441	\$ 11,820	\$ 11,820
Total Estimate Cost Plus Fixed fee	\$ 1,571,804	\$ 448,537	\$ 1,123,244	\$ 1,123,244
CLIN Five (Year 5)				
Total Estimated Costs	\$ 1,032,815	\$ -		\$ 1,032,815
Fixed Fee	\$ 14,128	\$ -		\$ 14,128
Total Estimate Cost Plus Fixed fee	\$ 1,046,943	\$ -		\$ 1,046,943
Total Reimbursable Costs	\$ 8,904,308	\$ 6,759,634		\$ 2,144,652
Total Reimbursable Fixed Fee	\$ 95,692	\$ 69,740		\$ 25,952
Total Reimbursable Estimated Cost Plus Fixed Fee	\$ 9,000,000	\$ 6,829,374		\$ 2,170,604

*CLIN 1 Expenditures are through April 30, 2009

** CLIN 2 Expenditures began May 1, 2009 through April 30, 2010

*** CLIN 3 Expenditures began May 1, 2010 through April 30, 2011 (MOD # 8 Transferred \$ 64,865.11 from CLIN 1 to CLIN 3)

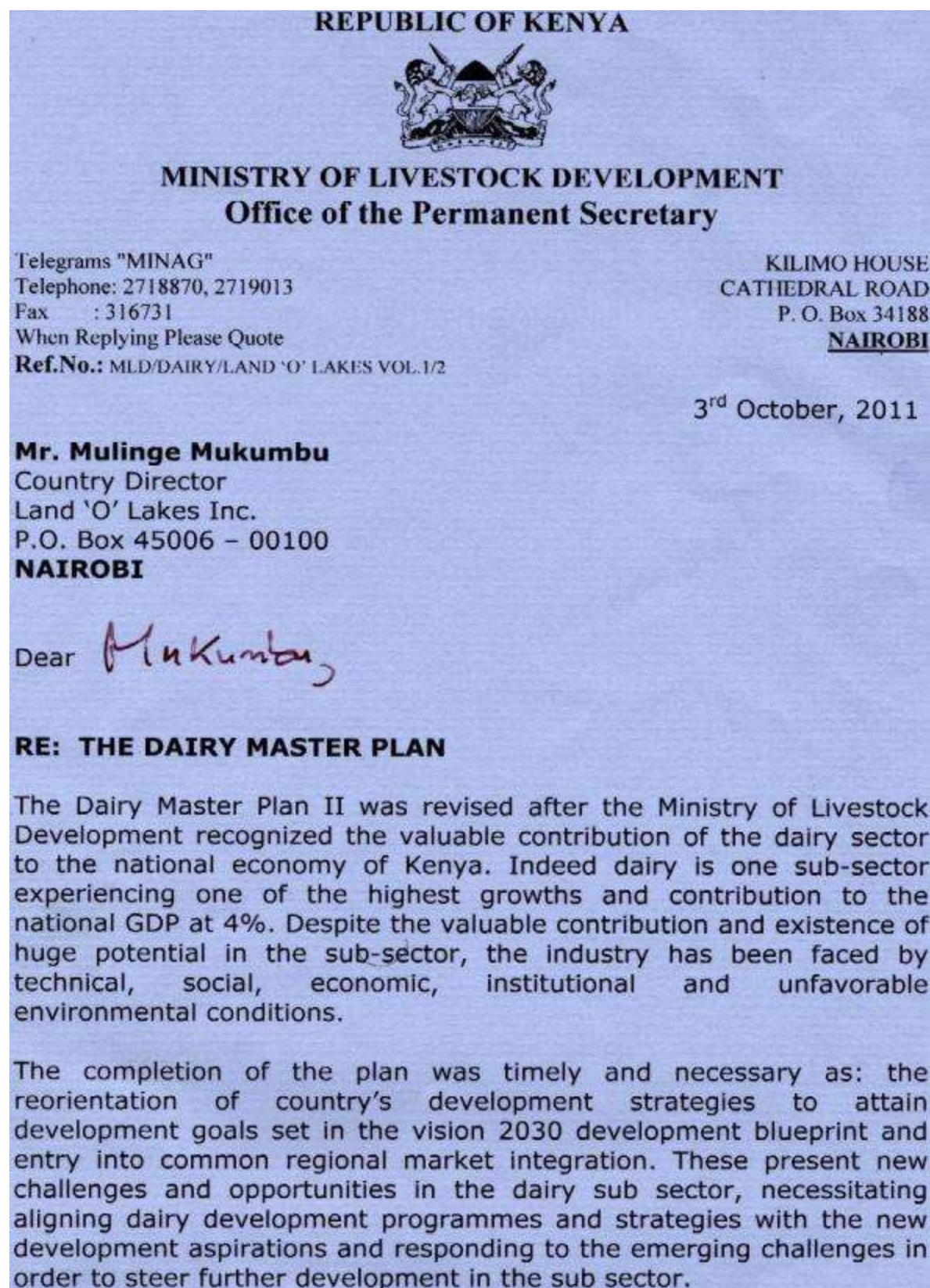
**** CLIN 4 Expenditures began May 1, 2011 through April 30, 2012

6.0 Annexes

Annex I: Processors registered in the e-portal

No	Name	Address	Town	Products
1	Farmers Milk Processors Ltd	P. O. Box 744	Kericho	Pasteurised Milk, Mala, Yoghurt & Butter
2	Bio Food Products Ltd	P. O. Box 27623-00506	Nairobi	F&N Yoghurt, S/Flavoured, Sterilised, Cream
3	Spin Knit Dairy Ltd	P. O. Box 78377	Nakuru	UHT, Fresh Milk, Butter, Yoghurt, Ghee, Mala, F/Milk
4	Brookside Dairy Ltd	P. O. Box 236	Ruiru	Pasteurised Milk, Mala, Yoghurt, Cream, Butter
5	Githunguri D. F. C. Processing Plant	P. O. Box 3	Githunguri	Yoghurt, Fresh Pasteurised Milk, Mala & Butter
6	Limuru Milk Processors	P.O. Box 563	Limuru	Fresh Milk, Butter, Ghee, Lala & Yoghurt
7	Kilifi Plantation Ltd	Private Bag	Kilifi	Pasteurised Milk, Fermented Milk, Cream
8	Afrodane Food Industries	Afrodane Food Industries	Nairobi	Pasteurised Milk, Mala, Yoghurt, Butter & Ghee
9	Sunpower Products	P. O. Box 41112	Nairobi	Cheese, Cultured Milk, Ice Cream
10	Doinyo Lessos Ltd	P. O. Box 169	Eldoret	Femented Milk, Cheese, Yoghurt
11	Eldoville Farm Ltd	P. O. Box 24390	Nairobi	Whole Milk, Yoghurt, Cream, Cheese
12	Sidik Hussein Miyanji T/A Miyanji Dairy	P. O. Box 84381	Mombasa	Fresh Milk, Yoghurt & Mala
13	New K.C.C. - Kitale Factory	Private Bag	Kitale	P/Milk, Butter, Ghee, Skim & Full Cream, Powder Milk
14	Greenlands Dairy Ltd	P. O. Box 1373	Limuru	Pasteurised Milk
15	Adarsh Developers Ltd	P. O. Box 318-00600	Nairobi	Fresh Milk, Yoghurt, Butter, Ghee & Cheese
16	Happy Cow Ltd	P. O. Box 558	Nakuru	Cheese, Yoghurt, Fresh Milk & Mala
17	Egerton University	P. O. Box 536	Njoro	Yoghurt
18	Lari Dairy Alliance Ltd	P. O. Box 208	Uplands	Pasteurised Milk, Yoghurt, Maziwa Lala & Ghee
19	Kabianga Dairy Ltd	P. O. Box 1595	Kericho	Fresh Milk, Mala, Ghee, Butter & Cheese
20	Meru Central Dairy Coopeative Unit	P. O. Box 2919	Meru	Fresh Milk, Mala, Yoghurt, UHT, Ghee, Cream & Butter
21	New K.C.C Eldoret	New K.C.C Eldoret	Eldoret	Fresh Milk & Milk Powder
22	Kinangop Dairy	P. O. Box 429	North Kinangop	Fresh Milk, Mala & Yoghurt
23	Kinyaga Food Processing Plant	P. O. Box 54039-00200	Nairobi	0722-397883
24	Kabiyet Agro & General Enterprises Ltd	P. O. Box 1902	Eldoret	UHT & Pasteurised Milk
25	P. N. K. Gaitara T/A Pamside Dairy Ltd	P. O. Box 745	020-2319874	Pasteurised Milk, Yoghurt & Mala
26	Tambul Dairies Ltd	P. O. Box 2889	Nakuru	Pasteurised Milk & Yoghurt
27	Ruba Mills Ltd	P. O. Box 102	Eldoret	Pasteusided milk, Mala, Yoghurt
28	Pasteusided milk, Mala, Yoghurt	Box 14345 00800	Uplands	Whole milk, Butter, Yoghurt, Ice cream

Annex 2: Recognition for participating in Dairy Master Plan



The Dairy Master Plan was developed in a participatory approach with inputs from stakeholders in dairy value chain, industry experts and enablers. The document describes the status, constraints, potential opportunities, strategies and action plan to transform and revitalize the dairy sub sector.

I therefore wish, on behalf of the Ministry of Livestock Development, to express my sincere appreciation and acknowledgement of the final draft of DMPII which was formulated through combined efforts of the DTF, and other stake holders in the Dairy value chain. The team did a commendable job from the design of guideline framework up to the formulation process. The support you gave to the formulation of this document through financial and technical assistance cannot be over-emphasized.

The Role played by "LAND O LAKES", Inc., our international development partner is really recognized by the Ministry.

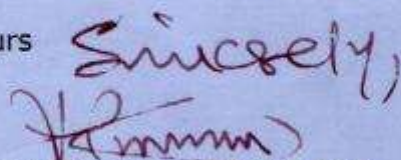
The Ministry also wishes to acknowledge the efforts and valuable comments made by the Dairy Task Force members and the Dairy Technical Sub-committees experts at every stage of the Dairy Master Plan production. Indeed, they have made compiling the document a success. Their technical contribution and complete review of the final version of the document is highly lauded and appreciated.

Finally the Ministry is indebted to The Animal Resources Consultancy Ltd for steering the whole process of documentation, presentation at every stage of the write up and taking time to incorporate the views and comments of all the stakeholders.

It is my positive expectation that the DMP will be used as a road map to transform the dairy sub sector. I call upon all our stakeholders and ministry staff to work together in achieving the set objectives of the dairy sub sector contained in Our Strategic Plan and this DMPII.

After the completion of the Master Plan, we next need to launch and disseminate it and you will be called upon to contribute.

Yours



**KENNETH M. LUSAKA, CBS
PERMANENT SECRETARY**

Annex 3: List of beneficiaries of KDSC Program

Active members of SBOs with MoU with KDSC	Active members of SBOs with MoU with KDSC (2009)	Active members of SBOs with MoU with KDSC (2010)	Active members of SBOs with MoU with KDSC (2011)	New beneficiaries (2010)	New beneficiaries (2011)	Farmers reached via other milk shed interventions	Milk shed
Kikuyu	1380	382	400	0	0	237	Kabete
Gikambura	127	153	200	26	47		
Sigona	40	43	46	3	3		
Muguga	N/A	163	215	163	52		
Nderi	1022	52	36	0			
Gatundu	200	120		0			
Thanduka	N/A	80		80			
Limuru	6000	5950	3800	0			
Bibilioni	N/A	57		57			
Kabete	N/A	N/A	650	N/A	650		
Ndumberi	N/A	N/A	2300	N/A	2300		
Kiambaa	N/A	1700		1700			
Kiganjo	3000	N/A		0			
Hexagon Self Help Group	230	N/A		0			
MIK	4000	2,000	2,110	0	0	9313	Nyeri
Othaya Dairy	2000	2000	1797	0			
Ihururu Dairy Farmers	1200	1230	1176	30			
Wakulima	9000	7000	7001	0	1		
Tetu Dairy	8090	700	787	0	0		
Kirichu Coop	N/A	350	351	350	1		
New Tetu	N/A	1,230	1,306	1,230	76		
Ngukurani Farmers	256	700	765	444	65		
Gakindu Dairy	500	700	1097	200	397		
Island	313	N/A		0			
Ainabkoi	616	820	1098	204	278	10113	Lessos
Cheptiret	N/A	654	2000	654	1346		
Kipchamoo	800	820	1218	20	398		
Kipsamoo	2000	2000	2000	0			
Emgwen	15	N/A		0			
Kamno	143	615	700	472	85		
Singalo	N/A	460	2000	460	1540		
Lelwak	200	310	500	110	190		
Ligwai/Bidii	N/A	913	1000	913	87		

Baitany/Tinderet	N/A	3520	4000	3520	480		
Kaptumo	N/A	241	269	241	28		
Moiben	N/A	822	600	822			
Progressi	N/A	420	1500	420	1080		
Tuiyo	N/A	210	1200	210	990		
Megun Gaa	N/A	N/A	1000		1000		
Angwan	N/A	N/A	500		500		
Onesmus	N/A	N/A	4895		4895		
Timborua	N/A	165	600	165	435		
Iten	N/A	54	500	54	446		
Sugoi	N/A	435	1000	435	565		
Baharini	N/A	200		200			
New Nginda	800	1700	1700	900		17700	Gatanga
Thakumi	550	1100	1600	550	500		
Umoja	N/A	800	1386	800	586		
Boyo	1070	1600	1600	530			
Kahuro	N/A	750	1000	750	250		
Wanjengi	400	850	920	450	70		
Ichichi	800	320	350	0	30		
Abedare East SHG	N/A	520		520			
kagaki			400		400		
samuka			1000				
Kirere	1500	3500		2000			
Sagawa	N/A	320		320			
Kikama	N/A	1560	4000	1560	2440		
Gika FSCS	1056	N/A		0			
Sakuma DSHG	980	N/A		0			
Mugi Elite Dairy	147	N/A		0			
Kagundu-ini-farmers	18	N/A		0			
Gaturi Kamacharia FCS	600	N/A		0			
Magomano DFCS	250	N/A		0			
Kitiri	450	1050	1260	600	210	17730	Kinangop
Tulaga	2800	1846	1708	0			
Dairymen	400	270	153	0			
Mununga Kianda	N/A	230		230			
Miharati	1350	410	578	0	168		

Wanjohi	470	310	310	0			
Gikara	N/A	200		200			
Karati	N/A	200	280	200	80		
South Kinangop	N/A	120	270	120	150		
Lari	250	185	87	0			
Gatamaiyu	2900	2100	2195	0	95		
Kamahia	1970	514	160	0			
Olaragwai	N/A	98		98			
Muki			3829		3829		
Kiriita FCS	3050	N/A		0			
Nyambini FCS	260	N/A		0			
Njoro	202	222	519	20	297	10549	Nakuru
Mumberes	N/A	674	1224	674	550		
Kiplombe	978	450	1436	0	986		
Mogotio	400	765	1026	365	261		
kiptoin	300	450	894	150	444		
Suka	360	500	702	140	202		
Sabatia	2400	N/A		0			
Molo	100	60	777	0	717		
Ngorika	390	180	618	0	438		
Molele	N/A	45		45			
Mauche	N/A	150		150			
Mutungati FCS	370	N/A		0			
Torongo			2443		2443		
Sigoro			446		446		
Tuongane			684		684		
Ngarua			668		668		
Marmanet			468		468		
Tukame			496		496		
Boiman			352		352		
Kinamba			193		193		
Tulwobmoi	40	N/A		0		9081	Trans Nzoia
Tongaren	400	307	2949	0	2642		
Bamwai	N/A	114	118	114	4		
Wamuini milk bar	55	112	281	57	169		
Taito	N/A	619	1028	619	409		
Tarakwa	57	330	666	273	336		
Meeboot	46	245	552	199	307		

Surungai	32	106	155	74	49		
Seum	40	95	105	55	10		
Naitiri	120	880	1081	760	201		
Koitogos	N/A	89	350	89	261		
Kipsombe	N/A	296		296			
Cherangany	N/A	1,967	2,355	1967	388		
Moi' Bridge	6000	2,300	2,315	0	15		
Marakwet	NA	3350	6167	3350	2817		
Teachers	N/A	1,500		1500			
Ruskebei	N/A	24	1893	24	1869	10998	Kericho
Sotik Umoja	N/A	1000	989	1000			
Kabianga	176	307	2108	131	1801		
Sotik Dairy Farmers	162	127	269	0	142		
Tenwek	287	212	502	0	290		
Mogogosiek	24	138	799	114	661		
Ketengeret FCS	176	N/A		0			
Sosiot FCS	50	N/A		0			
Mutarakwa farmers	20	N/A		0			
Kipangenge FCS	200	N/A		0			
Longisa FCS	53	N/A		0			
Chemosu Dairies	28	N/A		0			
Chesilyot SHG	32	N/A		0			
Gelegele FCS	66	N/A		0			
Mosop FCS	1500	N/A	2185	0	685		
Londiani FCS	63	N/A		0			
Cheborgei FCS	1500	N/A		0			
Total	79,830	75,436	115,216	35,177	49,444	85,721	

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